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*Epic Chronology.*—By E. WASHBURN HOPKINS, Professor in Yale University, New Haven, Conn.

THIS essay is the third installment<sup>1</sup> in the series announced in this Journal, vol. xxiii, p. 109. It was presented to the Society at its annual Easter meeting in 1902, but in the Journal of that year other publications took so much space that the editors thought it best to postpone this publication till the next year. In the interval I have received two works on the chronology of India touching directly on epic data. They are of very different character. The first is the *Chronology of Ancient India*, by Mr. Velandai Gopala Aiyer, B.A., in which are discussed the beginning of the Kali Yuga and the date of the Mahābhārata war. This is a very ingenious attempt to establish the date of the war as beginning Oct. 14, 1194 B.C., though "the epic was cast into its present form more than a thousand years after the date of the war" (p. 98). The date 1194 B.C. is reached by a series of eleven converging arguments, based on (1) the Vedānga Jyotiṣa, which points to the beginning of the Kali Yuga as approximately 1173 B.C.; (2) a statement of Garga, which points to the beginning of the Yuga as occurring a few years before 1165 B.C.; (3) classical historians, whose figures point to 1177–6 as the beginning of the Yuga; (4) The Malabar era, which indicates for the same event 1176 B.C.; (5) details of the epic which, if the Yuga began at the winter solstice preceding 1176 B.C., would indicate 1194 B.C. as the date of the war; (6) the Rājatarāṅgiṇī tradition, which indicates the dates of the war to be about 1190 B.C.; (7) a statement of Āryabhaṭa to the effect that the R̥ṣis were in Maghā in Kali 1910, i. e. 1192 B.C.; (8) the average duration of Hindu reigns, which also would indicate about 1193 B.C. as being the date of the war; (9) Garga's stanza cited in the Br̥hat Saṁhitā, which leads (? cf. IA. viii, p.

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<sup>1</sup> Compare also the syntactical paper evolved from the same series and published separately, AJP. vol. xxiv, p. 1 f.; and the note on the same subject at the end of this paper.

66)<sup>1</sup> to the same conclusion; (10) the first year of the Brhaspati cycle of sixty years, corresponding to the date as given by Garga, i. e. 1194–3 B.C.; (11) a stanza of the epic, fixing the day of the winter solstice occurring soon after the war, which, in connection with the elements of the Jyotiṣa, would indicate that the war took place in the latter part of 1194 B.C. The exact day is then deduced from other epic verses.

A glance at this array of arguments shows that they fall into two divisions, in one of which is sought the date of the Kali Yuga, and in the other the date of the epic as based on the date of the Yuga. Important as is the general contention, for the purpose of the present essay only the latter division comes into account, and in this division only the arguments numbered 5 and 11 above. These points will be briefly considered in their proper place in the course of this paper, but I have thus outlined Mr. Aiger's contention in advance, that their bearing might be understood. In regard to the whole theory I can see no objection to the conclusion that tradition points to the twelfth century as the date of the Bharata war; but it is possible that the details of the epic should be considered as based on tradition rather than as furnishing it, and that this tradition referred originally to a great Bharata war rather than to the special Pandu war with which the epic really has to do. That the heroes of the present epic lived in the twelfth century B.C. seems to be historically impossible, if for no other reason at least for this, that the Pandus as such are unknown till long afterwards.

Of a very different sort is the symbolic interpretation of epic epochs and eras deduced from a general theory of Hittite and Akkadian supremacy in pre-historic times by J. F. Hewitt in his *History and Chronology of the Myth-making Age*, which is the second work referred to above. A few examples will suffice to show the character of the "chronology" evolved out of a symbolic interpretation of the epic: A year of eleven months and another of seventeen months, divided into seven-day weeks, are discovered to be latent in the fact that the Kurus have eleven and the Pandus seven *akṣāuhīnīs* (armies), inter-

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<sup>1</sup> Compare the argument as reported in the Secretary's correspondence in the Proceedings for April 1903, at the end of the second half of this volume of the Journal.

preted as "monthly revolutions of the axle." The eldest Kuru was Duryodhana, who brayed like an ass at his birth, thus showing him to be the son of the divine (epoch-making) three-legged ass. Duryodhana's car was drawn by mules, "thus showing him to belong to the race born from the union of the sun-horse and ass." The thirteen-month year was brought to India during the rule of Kansa. Kansa is the same as Hansa, the goose-god of the Ugro-Altaic Finns (Ugro is Sk. *ugra*); so Su-bhadra means the Su-bird, Su is Akkadian-Egyptian Khu (mother-bird). The epic shows all the changes from the pole-star epoch to the solar epoch of reckoning. The year of seventeen months ended and the eighteen-month year began at the epic sacrifice of the (sun-)horse, 10,200 B.C., and the eighteen books of the epic symbolize the eighteen-month year (of twenty-day months), which was the outcome of the Pandus' victory. This was the year which was taken from India to Mexico in the Bronze Age. The epic is an allegorical history of India from the Neolithic to the close of the Bronze Age and represents the period of the years of eleven, fifteen, thirteen, and seventeen months each. Pārthas (sons of Pṛthā) are Parthians. Despite the date of the horse-sacrifice at which he is present, Yudhisthira himself was born in May, 12,200 B.C. Here, as the learned author sorrowfully admits, "there is a difficulty" about the exact date! But that Karṇa is the "horned lunar-solar god of the three-year cycle," and that Gandhārī (from *gan*, 'land,' and *dhari*, 'wetter') is the goddess Dharti, the star Vega, in the constellation of the Vulture, now Lyra, which was the pole-star from 10,000 to 8,000 B.C., admits not even of an interrogation point.<sup>1</sup> The reader will readily see why a modest study like mine can dispense with any discussion of such conclusions as these, interesting as they are. I turn now to a study of epic chronology based not on fancy but on facts.

#### NEGATIVE TIME; INDEFINITE PERIODS.

God, as Great Time, Mahākāla, a late-epic epithet of Śiva, and as All-time, is also Not-time, *akālaś cā 'tikālaś ca duṣkālaḥ kāla eva ca*, xii. 285. 143 (after *akalaḥ kelikalaḥ kaṭiḥ*; cf.

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<sup>1</sup> Hewitt, *op. cit.*, pp. 309 f., 327, 374, 426, 529, 561 f., 580, 587.

Mait. Up. vi. 15), or, otherwise, the destruction of time in the reabsorption of the universe, *pratyāhāra*; though elsewhere (*loc. cit.*, *Great Epic*, p. 182) Time is the destroying Lord. As with space, the word *antara*, interval, when in negative form, expresses negative time, "there was no interval," etc. The word itself is combined with "winking," in a colloquial form. Thus, *nimeṣāntaramātreṇa*, "in the measure of a wink's interval" (space of a wink), vii. 98. 37, etc. The wink is the twinkling of an eye (expressly), *caḥṣurnimeṣamātreṇa*, xii. 321. 11; *yāvad akṣinimeṣāṇi*, xiii. 100. 41; *akṣnor nimeṣamātreṇa*, vii. 51. 17; and, as with us, it may be cut in half, though the latter phrase is rare, *nimeṣārdhāt*, "in half a wink," viii. 25. 13; *madhyāhne vāi nimeṣārdham (tiṣṭhasi tvaṁ divākara)*, "at noon (O sun, thou standest still) half a wink," xiii. 96. 6.<sup>1</sup> More common than "half a wink" is *muhūrtakam*, which in colloquial language as diminutive of *muhūrta* (*muhuh* = *mox*) has no reference to hour but means a little time, *tuṣṇīm āsīn muhūrtakam*, R. vii. 13. 15, Gorr., but not in Bomb. ed.; Mbh. i. 133. 2, *tiṣṭha tāvan muhūrtakam*, "stop just a moment."

In xiv. 48. 2 and 3, a moment is expressed first by a breathing, *ucchvāsamātram*, and then by a wink, *nimeṣamātram*, both being followed by *api*, as marking the shortest time (at death, *antakāle*); in v. 79. 20, by *lavaśaḥ kṣaṇaśaś cā 'pi*.

The indefinite non-technical nature of these terms shows itself in the exchange of *nimeṣa* with *unmeṣamātreṇa*, for example in xii. 313. 6; and in the phrase *muhūrtam iva*, "momentarily," compared with *muhūrtaṁ sahyatām*, "a short time," ib. 319. 9. The *muhūrta* in iii. 297. 7 appears with *velā*, period of time, as well as *kṣaṇa*, another indefinite word for moment. The eighth *muhūrta*, noon, *kutapa*, is called *abhijit* and is mentioned by this name in R. Gorr. vi. 112. 70; but the corresponding passage in Mbh., iii. 291. 66, has only the day and asterism.<sup>2</sup>

<sup>1</sup> Compare Vas. xi. 36 : *divasasyā 'ṣṭame bhāge mandibhavati bhāskaraḥ, sa kālāḥ kutapo nāma* (see the next note). So (epic) vii. 99. 1, where the sun "goes slow as it turns in its course (at midday) to the west."

<sup>2</sup> In xiii. 64. 27 *abhijita (yoga)* is mentioned as the twentieth lunar asterism; the same word occurring in i. 123. 6 in the other sense of *abhijit*, the eighth (noon) hour: *āindre candrasamāyukte muhūrte*

The flight of an arrow also measures a short indefinite period of time (as the stick-cast measures space). Thus in xii. 296. 32: *iṣuprapātāmātram hi sparśayoge ratih smṛtā*, "sensual pleasure is said to be (short-lived as) the measure of an arrow's flight"; ib. 321. 11, *laghvastragatigāminī*, "going the pace of a light arrow", i. e. in a moment; ib. 328. 30, *yathā bāṇaṁ guṇacyutam (āyāntam)*, (swift) "as a cord-spied arrow."

But as the indefinite sense of *nimeṣa* is lost in the formal time-table, so with other small divisions. In v. 109. 4, as typical divisions are named the *truṭi* and *lava*; the former being joined with *kalā*, portion, *kṣaṇa*, glance, and *nimeṣa*, wink, as "hairs of Time," in xii. 322. 25. Of these, *kṣaṇa*,<sup>1</sup> etymologically meaning a "look" or "glance," is, like *nimeṣa*, a moment, and so a moment of leisure (*kṣaṇin*, "at leisure," ii. 13. 45), whence comes a name for the giver of leisure, Night, *kṣaṇadā*, a late word, found in viii. 1. 8. Characteristic of the later didactic epic is the fact that it uses the ending *rātra* as an independent word, *trīṇy rātrāṇy upoṣitvā tena pāpād vimucyate*, in the jargon of this period, xiii. 136. 11.

Time-periods casually mentioned or enumerated in various passages of Śānti, xii. 137. 21; 227. 97 (repeating, as a section, 224) and also xii. 166. 14, do not present the ordered progression of the time-table, but juxtapose *kāṣṭhā*, *kalā*, *muhūrta*, *divā*, *rātri*, *lava* (before month, half month, season, aeon, year); or *ahorātra*, month, *kṣaṇa*, *kāṣṭhā*, *lava*, *kalā* (all acc., followed by *sampīdayati yaḥ kālo vṛddhiṁ vārdhuṣiko yathā*, "Time adds up days etc. as a usurer adds up his increase," 227. 97); or, in the order of creation, years, seasons, months, half months, *lavas* and *kṣaṇas*. In ii. 11. 37 (also late), *divā* is nom., as above.

The *lava* is a bit (*saktuprasthalava*, xiv. 90. 115), or minute "cut" of time, corresponding loosely to our minute in ordinary speech. God is praised as all time in i. 25. 14,

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*'bhijite 'ṣṭame, divā madhyagate sūrye tithāu pūrṇe 'tipūjite*. Here *āindra* is the asterism *Jyeṣṭhā* and *madhyagate sūrye* is "at midday." Compare xii. 326. 28: *madhyamgatam ivā 'dityam*, "like the midday sun" (metrically altered).

<sup>1</sup> So too the compound of this word, *abhikṣṇam*, every moment, too much, i. 78. 9; 100. 60; xii. 86. 29 (*bhṛśam vā*). Compare *anvakṣam* in Yāj. iii. 21, for the adverbial use in *kṣaṇena*, "in a glance" (moment).

*tvam muhūrtaś tithiś tvam ca tvam lavas tvam punaḥ kṣaṇaḥ  
śuklas tvam bahulas tvam ca kalā kāṣṭhā trutiś tathā,*

where *bahula* is a poetical equivalent of the dark half of the month, and *truti* is a fractional bit of time. The *muhūrta*, in ordinary language a moment, in the formal time-table of the epic is an hour of forty-eight minutes. "They say that in the evening, *pūrvārātra*, the twilight hour, *muhūrta*, except for eighty *lavas*, is devoted to demons, the remainder, *śeṣam anyat*,<sup>1</sup> to men," i. 170. 8–9. Another passage states that "after mid-night" is the time when demons roam about: *rātrāu nīśithe tv abhīle gate 'rāhasamaye, nṛpa, pracāre puruṣādānām rakṣasām ghorakarmaṇām*, iii. 11. 4. The former passage is to be compared with i. 154. 22, which says that the whole twilight, *saṁdhyā*, is *rāudra muhūrta*. Besides the *rāudra*, after sunset, *muhūrte ramyadārune*, iii. 1. 45 (both "fair and horrible"), the noon hour, *abhijit (kutapa)*, above, and the *brāhma muhūrta*, the hour before sunrise, are mentioned, xiii. 104, 16 (= *apararātreshu*, "at the end of the night," ii. 5. 29).

Little can be learned of the relative length of these periods as mentioned generally in the epic. They appear to be designations of short times as indefinite as twinkling and moment. Nor does the order in which they are mentioned in other places help in this matter, for sometimes one and sometimes another precedes. In xiii. 14. 185, the order is day, half day, *muhūrta*, *kṣaṇa*, *lava*; and ib. 395, *nakṣatrāṇi, grahāḥ*,<sup>2</sup> *māsārdhamāsā rtavo rātriḥ saṁvatsarāḥ kṣaṇāḥ, muhūrtāś ca nimesāś ca tathāi 'va yugaparyayāḥ*. The "year, season, half month, day and night, *ahorātra, kalā, kāṣṭhā, mātrā, muhūrta, lava, kṣaṇa*," make the list of xiii. 159. 32, which brings in the *mātrā*, *mora*. This is found also in xiii. 17. 141 f., where the list is season, year, month, half month, *pakṣa* (Śiva as "number-effecting," *saṁkhyāsamāpanaḥ*, is explained by N. as effecting *saṁkrānti* and the new and full moon days), *kalā, kāṣṭhā, lava, mātrā, muhūrta*, day, night, *kṣaṇa*.

Besides being an astronomical period or course (of the sun), as in xii. 51. 15, the *kāṣṭhā* (copied from Kāṭha Upaniṣad, iii. 3,

<sup>1</sup> Compare (*tad*)*ahaḥśeṣam*, xiii. 19. 101; 20. 9.

<sup>2</sup> Compare xii. 285. 128, where also *meghakāla* is mentioned (*saṁvartakabalāhakaḥ*) and the *yugāvarta*, 144–152 (see below).

*sā kāṣṭhā sā parā gatiḥ*) is found in a non-technical sense in xiii. 16. 57, *iyaṁ sā paramā kāṣṭhā iyaṁ sā paramā kalā . . . iyaṁ sā paramā gatiḥ*. The Upaniṣads otherwise, it may be remarked, have the list, day, night, month, year, *kalā muhūrtāḥ kāṣṭhās ca*, but not till Mahānār. i. 8.

#### DEFINITE DIVISIONS.

Nevertheless, the pseudo-epic has its regulated time-table, xii. 232. 12 f. It is in a lone triṣṭubh stanza, which has been introduced into the poem at a period later than Manu, whose general scheme is followed, but with this important difference, that the epic agrees in detail with the later Puranic view rather than with Manu; excelling the latter also in exactitude.<sup>1</sup> It is as follows (sc. *gaṇayet*, "one may reckon"):

15	<i>nimeṣas</i>	make one <i>kāṣṭhā</i>
30	<i>kāṣṭhās</i>	" " <i>kalā</i>
30 $\frac{1}{10}$	<i>kalās</i>	" " <i>muhūrta</i>
30	<i>muhūrtas</i>	" " day and night
30	days and nights	" " month
12	months	" " year (of two semesters, <i>ayane</i> ).

Manu's account, i. 64, differs from this in ascribing to the *kāṣṭhā* eighteen *nimeṣas*, instead of the epic and Puranic (VP. i. 3. 7) fifteen; nor does the law-book add to the thirty *kalās* that make a *muhūrta* the epic's one tenth: *triṁśatkalaś cā 'pi bhaven muhūrto bhāgaḥ kalāyā daśamaś ca yaḥ syāt*.

According to this table, the *nimeṣa* is about one-fifth of a second; the *kāṣṭhā*, about three seconds; the *kalā*, about a minute and a half; and the *muhūrta*, just forty-eight minutes. On *kalā* as a fraction, see this Journal, xxiii, p. 135. For a Brāhmaṇa calculation of time-divisions, see ŚB. xii. 3. 2. 1-5.<sup>2</sup>

<sup>1</sup> But it differs from that later division (not recognized at all in the epic) by which the Hindu hours and minutes are exactly inverted as compared with ours, that is (instead of a day of twenty-four hours of sixty minutes each) a day of sixty hours, *nāḍis*, *ghaṭikās*, of twenty-four minutes each (*ahorātraḥ ṣaṣṭighaṭikābhīḥ*, N. to ii. 11. 38).

<sup>2</sup> This Brāhmaṇa recognizes half-months of fifteen days, twelve and thirteen months; three, five, six, and seven seasons, i. 3. 5. 8 f.; ii. 2. 3. 26 f., etc. The table (referred to above) in the twelfth book (cf. x. 4. 3. 8) has the *muhūrta* as above, one thirtieth of a day; and the *nimeṣa*; but this is cal-



But, before proceeding with the greater divisions of time added to the table, it will be necessary to take up in more detail the last three divisions of the scheme already given.

### DAY AND NIGHT.

Tacitus says of the Germans' view, *nox ducere diem videtur*. The Polynesians and New Zealanders to-day always count by nights, and the Babylonians originally made the whole day begin with the evening. According to the Vedic views represented by the Brāhmaṇa period, ĀB. viii. 15. 2; ŚB. ii. 4. 2. 3; x. 6. 4. 1, and by MS. i. 15. 12, it is not quite certain that night was the norm of time. It is true that night generally precedes when days and nights are mentioned together,<sup>1</sup> but on the other hand, in contrast to space, *dyāvah*, time is reckoned as "days" in RV. iii. 32. 9, "nor days, nor months, nor years" (harvests). Yet since we find also "nights and years," iv. 16. 19, and this view prevails, it may, perhaps, be regarded as the more primitive Aryan norm of short times. It is the Avestan method of measuring, and Dr. Bolling has lately shown that in Homer also the day is reckoned from sunset to sunset.<sup>2</sup> How long such a method may continue under favoring circumstances was well known a few years ago to the boys of New England, whose weekly holiday ceased sharply as the Sabbath began, at sundown on Saturday!

In the great Hindu epic, an inheritance of stereotyped formulas somewhat affects precedence in the phraseology of the poets, who use *ahorātra*, *divārātra*, but also *rātryahanī*. Generally speaking, night is the favorite word in compounds such as *tri-rātra*, *saptarātra*, *daśarātra*; but the alternate forms are used as well, *ekāha*, *saptadina*, etc., and the same passage may give precedence to both words, as, for example, in xii. 124. 16, *ekarātreṇa*, *tryahēṇa*, *saptarātreṇa*, *prthivīm pratipedire*. "Several days" is *saptā 'py ahāni*, i. 92. 15, and *niśāniśam* and

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culated otherwise, as a subdivision of *kṣipras*, *etarhis*, *idānis*, and breathings (= *nīmeṣas*), arranged in multiples of fifteen. Here the year has three, five, six, or seven (Vedic) seasons; twelve or thirteen months; three hundred and sixty days; ten thousand eight hundred *muhūrtas*; etc. On the sixty-hour division in the Rig Veda, see Zimmer, AIL., p. 363, and Ludwig's note to RV. 1. 123. 8.

<sup>1</sup> Cf. Zimmer, *op. cit.*, p. 360 f.

<sup>2</sup> AJP. xxiii, p. 428 f.

*divāniśam* are used indifferently. So in other phrases, *sūryā-gñinā rātridivendhanena*, "with the sun as fire, night and day as kindling-wood," xii. 322. 92; *rātrāv ahani saṁdhyāsu*, "night, day, twilights," xiii. 115. 28; *prabhāte ca sāyam ca*, "morn and eve," iii. 305. 10; *sāyam prātaś ca*, "eve and morn," iii. 200. 83; xiii. 78. 9; *āhnikam cāi 'va nāiśam ca duḥkham*, "daily and nightly sorrow," v. 110. 14; *avasaṁs tatra saptarātram, aṣṭame 'hani samprāpte*, "they stayed there a sennight, on the arrival of the eighth day," iii. 158. 22 f.; *aṣṭā-daśāha, trayaviṁśatirātra, aṣṭāviṁśatirātra*, xv. 10. 30; xii. 46. 14; iv. 36. 3, respectively.

But it is formally stated in xiv. 44. 2, that, as the bright fortnight of the moon precedes the dark fortnight, so day precedes night:

*ahaḥ pūrvam tato rātrir māsāḥ śuklādayaḥ smṛtāḥ  
śravaṇādīni ṛkṣāṇi ṛtavaḥ śiśirādayaḥ,*

"the day comes first, then the night; the months begin with the bright fortnight; the asterisms begin with Śravaṇa; the seasons begin with (the cool time) Śiśira." Moreover, *śvaḥ*, to-morrow, always in practice refers to a day that begins in the morning, not at sunset, and "half the day" is measured from the sunrise. On the other hand, it is formally stated in xiv. 44. 18, that days end at sundown, *ahāny astamayāntāni*, and night ends at sunrise, *udayāntā ca śarvarī* (as "joy ends in sorrow and sorrow ends in joy"); but here the "day" is the bright part of the whole time. Light ends in darkness as darkness ends in light, is the whole meaning; probably without thought of defining the (following) day as beginning with evening.

Besides the restriction of the border-period, *velā*, of the twilights, *pūrvā* and *paścimā*,<sup>1</sup> day and night are divided into fore,

<sup>1</sup> But *velā* is a general hour; *sarvāsu velāsu*, "at all hours," iii. 305. 3 (*paścimā velā*, iii. 65. 5). 'At dawn' is *śarvayām* (or another word for night) *prabhātāyām, vyūṣṭitāyām, vyatītāyām*; or *prabhāte, prage, vimale, uṣasi, uṣasya- (uṣasyoḍhā bhārateyaś ca, xiii. 76. 18)*. On *śvo-bhūte*, etc., see the last paper in this series, Journal, xxiii, p. 351. In the formal definition of the BS. xlvii. 21, the *saṁdhyā* is from half-sunset (when the sun is half under) till the stars become visible (not yet bright), and from their fading till half-sunrise: *ardhāstamayāt saṁdhyā, vyaktibhūtā na tārakā yāvat: tejahparihānimukhād, bhānor ardhodayaṁ yāvat*. See below on the correlation of this division of the day with the corresponding century-*saṁdhyā* in the scheme of ages.

mid, and after parts, *pūrvāhṇa*, *madhyāhṇa* (*madhyāṃdina*), *aparāhṇa*; *pūrvarātra*, etc., the only measured period being the *saṃdhyās*, twilights (of one hour and twelve minutes, as reckoned later). Compare viii. 91. 51; xii. 207. 29; and xii. 224. 53 f.:

*ṛtūn māsārdhamāsānś ca divasānś ca kṣaṇānś tathā  
pūrvāhṇam aparāhṇam ca madhyāhṇam api cā 'pare  
muhūrtam api cāi 'vā 'hur ekaṃ santam anekadhā  
taṃ kālam iti jānīhi yasya sarvam idaṃ vaśe,*

where Time and Fate, *bhavitavyam*, set at naught the doctrine of sin working out in a new birth (ib. 32, parallels, *Great Epic*, p. 103). In iii. 65. 6; xii. 304. 3, etc., *ardharātra* is midnight (also *niśītha*) instead of *madhyarātra*, as used in the epic, xv. 5. 34, where, after *prātar*, *pradoṣa*, *aparātra* have been mentioned, the king is told to have his *vihāra* at midnight and midday, *madhyarātre*, *madhyāhṇe*. Manu, vii. 151 (in the same connection) uses *ardharātra*.<sup>1</sup> Evening has more names than any other division of the day, of which *sāyam*, *sāyāhṇa*, is most current, as in the phrase, common to both epics, *yatra sāyaṃ-gr̥ha*, one whose house is where evening finds him, i. 13. 12, etc.; R. ii. 67. 23. The beginning of evening (when fire-flies are out, vii. 15. 18) is currently *pradoṣa* (*niśāmukha*); "late in the afternoon" is *mahaty aparāhṇe*, i. 190. 47. Compare ĀB. ii. 15. 8; Manu iv. 129, *mahāniśi*, and xii. 322. 73: *śvaḥkāryam adya kurvīta* ("do to-day to-morrow's duty") *pūrvāhṇe cā 'parāhṇīkam* ("do in the morning the work of the afternoon"). Compare ŚB. ii. 1. 3. 9, "put not off till to-morrow; for who knows man's morrow?"

The three watches of the night are alluded to in a stanza which speaks of one night of three watches, *triyāmā rajanī*, as being so fearful as to seem like a thousand watches, *sahasrayāmapratimā*, vii. 184. 14. Vālmiki expresses the same idea, R. ii. 62. 17 (G. 63. 17), and his imitator, G. ii. 10. 17, *triyāmā rātriḥ . . . varṣaśatopamā* (omitted in the Bomb. ed. 13. 15); and it is found again in more modern form in the Mbh. viii. 1. 8,

<sup>1</sup> But a Yogin meditates in the fore-part, *pūrvarātre*, and sleeps in the middle of the night, *madhyarātre*, rising within an hour after this, xii. 326. 43. Compare xii. 229. 39.

*duḥkkena kṣaṇadā rājan jagāmā 'bdaśatopamā.*<sup>1</sup>

The last watch of the night includes the *muhūrta* of Brahman (or Prājāpatya, as in Vas. xii. 47), alluded to above.

The formal rule for the king is that he shall sleep two watches and rise in the third *yāma*, ii. 5. 85.<sup>2</sup> In xii. 53. 1, "he woke half a watch before day" is expressed by

*yāmamātrārddhaśeṣyām yāminyām pratyabudhyata,*

where *yāma* gives the name to *yāminī*, night. A corresponding division of the day is apparently alluded to in xiv. 39. 18,

*ahas tridhā tu vījñeyam tridhā rātrir vidhīyate,*

though years and conjunctions of seasons also, *varṣāṇi*, *saṁdhayaḥ*, are here made three-fold, by virtue of the all-pervading *guṇas*. The natural three-fold division of the day, morn, or sunrise, *sūryadarśana*, noon, *kutapa*, and evening, of many names, is implied in the conventional use of a ritualistic formula; so that we find not only *trivelam*, "thrice daily," but also *saptatṛiṣavānaṁ snātvā*, xiii. 136. 18, "bathing three times a day for a week." Sunrise gives a number of expressions indicating that the time for man to be up is already passed when the sun is up: *utsūryaśāyin*, *abhyuditaśāyin* (like *prageśaya*, *prageniśa*), used of lazy people, opposed to early risers, *kalyan utthāya*, *kalyotthāna*, *prātar utthāya*, etc., as in xiii. 130. 9; 146. 48; xv. 11. 11. The word sun is not necessary. Thus, "at or before sunrise" is simply *udaye* or *udite* 'nudite vā 'pi, xii. 60. 49. An hour after sunrise is *muhūrtodita ādītye*, i. 126. 12. There is probably no sharp distinction between the periods loosely indicated by "brightness." Thus *prabhāte* is usually the first dawn (as in *nīśi prabhātāyām*, "when night grows light"), but in i. 21. 1 we find *tato rajanyāu vyustāyām prabhāte* 'bhyudite ravāu "when day had dawned,

<sup>1</sup> Cf. iii. 164. 13 (grief made every night and day seem like a year). Conversely, in iii. 176. 5, four years of joy pass "like one night."

<sup>2</sup> I have noticed in the epic no "fourth watch," such as is found in the classical period, e. g. in the BS. xxx. 3 f., and Harṣacarita, to mark the time before dawn. Thus in Harṣacar. 166, the fourth watch, before dawn: and in 228, at the end of the third watch, eight strokes mark the number of leagues in the day's march. The modern Hindus divide the day also into watches, *pahars*, of three hours each.

and morning had come, and the sun had risen.”<sup>1</sup> The sun “sets” is usually expressed by “goes home,” *astam upāiti savitā* (at sunset, *astam gacchati bhāskare*; just after sunset, *sūrye ‘stam ite sati*, “being gone,”<sup>2</sup> ix. 29. 64 and 87; the sun sets twice on this day!), but this is sometimes filled out with the word hill, *sūryo hy astam abhyāgamad girim*, i. 24. 10.

Of short combination of days, *saptarātra*, sennight, is colloquial, interchanging with *saptāṣṭa divasāḥ*, seven or eight days, the former perhaps more common: *saptarātreṇa mṛtyubhāḥ*, “he will die within a week,” xii. 318. 13 (amongst the *ariṣṭāni*, “death-signs”), etc. But ten days also make a group and three and its multiples are more common in the ritual, *trirātra*, *tryaha*, *ṣaṇrātra*, *dvādaśarātra*, periods of three, six, and twelve days. The fortnight, *ardhamāsa*, *māsārdha*, *pakṣa*, is not regarded as a group of days but as half a moon, or the one wing, division, of a month, *pūrva* and *apara*, xiii. 87. 19 = *Manu* iii. 278.

In accordance with a “Veda-word” (cf. *ŚB.* xii. 2. 2. 23) there is a formal equation of the year with a day and night in iii. 52. 23:

*ahorātram mahārāja tulyaṁ saṁvatsareṇa ha,*

which may be compared with the ritualistic substitution of a month for a year, ib. 35. 33.<sup>3</sup>

### MONTHS AND SEASONS.

**The Months:** Although the month of thirty days is Vedic, yet, to judge by colloquial epic language, the month was a moon’s length, twenty-seven to twenty-eight days. This is implied in the colloquial expressions just referred to, which, like our week of seven to eight days, give natural halves of a-half-moon period.

<sup>1</sup> So in *Sūtras*, when “the sun is over the trees,” *adhivṛkṣasūryam adhvānaṁ na pratipadyate*, is either noon or late afternoon, *Vas.* xii. 43; *Gāut.* v. 40.

<sup>2</sup> Compare the phrases, *sūryāstamanavelā* (*astamana*=*astamayana*); *astam yāte* (or *prāpte*) *divākare* (or *dinakare*). Before the evening twilight comes on is expressed by *anāgatāyaṁ saṁdhyāyām paścimāyām*. The noon of the sun is expressed by *madhyadeśagate ravāu* (after *prāpte cā ’hnikakāle tu*), xii. 346. 14 (in 18 *pitarah* is accusative); also by the sun’s turning *astaśikharam prati*, vii. 99. 1.

<sup>3</sup> Compare *Mahānār. Up.* xxv. 1, *ye ahorātre te darśapūrṇamāsau*.

But the regular ascription of "ten months" to the period of pregnancy (c. 280 days) sets the matter beyond doubt, as otherwise we should have an extraordinary duration (300 days) assumed as the normal period. Apart from cases of diabolic birth, pregnancy of three years, i. 74, or longer, and divine or devilish performances of a similar sort, as when "demons conceive and instantly give birth,"<sup>1</sup> birth is usually said to follow in ten months (cf. Ch. Up. v. 9. 1), *garbhān daśa māsān bibh-rati*, iii. 134. 17; xii. 7. 14; iii. 128. 7; 132. 14; 205. 10; xii. 332. 18, etc. So RV. x. 184. 3; ĀB. vii. 13. 9, *daśame māsi*, in the course of the tenth month.<sup>2</sup> But as the solar month becomes popular we find in the Sulabhā-Janaka episode, inserted in xii. 321, that the period of pregnancy is set at the end of the ninth month, *sampūrṇe navame māsi jātaḥ*, śl. 117. So in the introduction to the poem, i. 63. 61, Vyāsa's mother is ready to be born after nine months, as soon as the tenth month arrives, *māsi daśame prāpte*; and in the law-book of Yājñavalkya, iii. 83, birth is said to take place "in the ninth or tenth month." Also in iv. 36. 3, "twenty-eight nights or a month to its end" (was the fight) seems to imply a month of thirty days; while in xii. 232. 13 a "month" is formally declared to be of this length, *māsaḥ smrto rātryahanī ca triṅśat*. To distinguish the two kinds of months we find Māgha described as *sāumya*, lunar, in xiii. 168. 28. Compare, however, the sense of agreeable or moonlighted in v. 142. 16-17: *sāumyo* (N. *candrikayā abhirā-maḥ*; this is said a week before the new moon) '*yaṁ vartate māsaḥ supṛāpayavasendhanaḥ . . alpamakṣikāḥ, niṣpāṅkaḥ, nā'tyusṇaśiśirāḥ*. As the solar month, really civil month, of thirty days was thus reckoned from remotest antiquity, it is a question of locality or popularity only. In many cases a "month," according to long-inherited use and metaphors (below) was thirty days; in other cases, however, it was a moon, not quite twenty-eight days, though reckoned as full twenty-eight.

<sup>1</sup> So a devil's baby becomes full-grown at once: *sadyo hi garbhān rākṣaṣyo labhante prasavanti ca* (bālo 'pi yāuvanam prāptaḥ), i. 155. 35 f.

<sup>2</sup> Cf. *daśamāsyā*, *daśa māsān*, RV. v. 78. 9; ŚB. iv. 5. 2. 4. But ŚB. xi. 1. 6. 2, *saṁvatsara eva strī vā gaur vā vadavā vā vijāyate* ("in the course of a year," as in ŚB. iii. 2. 1. 27, *saṁvatsare jāyamānaḥ*), gives only the outer limit, this side of which birth takes place, "in (-side of) a year." Cf. ib. xi. 5. 4. 6.

A stanza cited above, p. 15, shows that the month does not begin with the full-moon, as was sometimes the case,<sup>1</sup> but with the bright fortnight, *māṣāḥ śuklādayaḥ*. The moon, it is said, is born at the beginning of the bright fortnight (by means of drinking the "six essences" of Varuṇa), *jāyate taruṇaḥ somaḥ śuklasyā 'dāu tamisrahā*, v. 110. 4. The bright half ends with the full moon, *śuklātyaye pāurnamāsyām*, i. 76. 61. The full-moon day is par excellence the month-day, e. g. *kārtikī* is the full-moon (night) of Kārtika. "Fair as the full-moon," *pāurnamāsyām iva 'nduh*, i. 76. 61, etc., is an epic commonplace;<sup>2</sup> "ugly as the moon on the fourteenth day of the dark fortnight," *draṣṭuṃ na naḥ prītikaraḥ śaśī 'va kṛṣṇasya pakṣasya caturdaśāhe*, xi. 21. 13, refers to a gnawed body, diminished and ghastly.

Only traces remain of Vedic phraseology in naming the seasons (months): *supuspītavane kālē kadācīn madhumādhvā* (= Cāitra-Vāisākha) spring-time, i. 125. 2; *śuciśukrāgame*, the time of heat,<sup>3</sup> *śuciśukrāgame kālē śuśyet toyam ivā 'lpakam*, ii. 47. 24; "the sun absorbs water with his fierce heat when intervening between Śuci and Śukra," *ugraraśmīḥ śuciśukṛamadhyagaḥ*, viii. 79. 78. But this is also the tempest-time (when the monsoon first blows), *jaṅghāvāto vavāu cā 'sya śuciśukrāgame yathā*, i. 151. 2 (*jyeṣṭhāṣāḍhayoḥ samaye*, N.). The following rain-months, Nabhas and Nabhasya,<sup>4</sup> are alluded to in H. ii. 95. 1; but there is no mention of the corresponding Vedic terms for autumn, Ūrja and Iṣa; of those for winter, Saha and Sahasya; or of those for cool-time, *śāśīrāu*, called Tapa(s), Tapasya (*yad etayor balīṣṭhaṃ śyāyati*) in ŚB. iv. 3. 1. 19; viii. 7. 1. 5.

It is usually in conventional passages that the "four-month" season is noticed: *darśe ca pāurnamāse ca cāurmāsyē punaḥ*

<sup>1</sup> ŚB. vi. 2. 2. 18 and Kāus.B.v.1, etc., give the full moon of Phāl-guna as the beginning of the spring and of the year (*pāurnamāsi ha vāva prathamā vyuvāsa*).

<sup>2</sup> Compare Yāj. i. 80, *sustha indāu*, "when the moon is full" (?), one should "avoid Maghā and Mūla in connubial intercourse."

<sup>3</sup> Cf. ŚB. iv. 3. 1. 14, Madhu and Mādhava are the *vāsantikāu* months of growth; ib. 15, Śukra and Śuci are the *grāīsmāu* months of strongest heat.

<sup>4</sup> ŚB. loc. cit. 16, *vārṣikāu*.

*punah*, (offered horse-sacrifices) “on the new and full-moon and on the thirds of the year,” xii. 29. 114. But it is once given as the proper term for wages which are to be paid *cāturmāsya-ram*, “at least every four months,” ii. 5. 118. The seasons thus divided are summer, rains, and winter, or spring, rains, autumn, according to ŚB. xii. 8. 2. 33; vii. 2. 4. 26, respectively (which must embrace the remaining time). The full-moon of Phālguna is the regular beginning of the *Cāturmāsya*. See also below.

According to xiii. 168. 6 and 28, the winter solstice occurs near the beginning of the bright half of the month of Māgha. The saint who dies here is anxious to pass away at an auspicious period, i. e. in the northern course of the sun and the bright half of the month. He asserts in this passage that the proper conditions are fulfilled. The solstice has already taken place (xii. 47. 3) and he says: “The lunar month Māgha has arrived, Yudhisthira, and the bright fortnight must be two-thirds (or a quarter) past:”

*māgho 'yam samanuprāpto māsah sāumyo Yudhisthira  
tribhāgaśeṣah pakṣo 'yam śuklo bhavitum arhati.*

The doubtful meaning of *tribhāga* ( $\frac{1}{3}$  as well as  $\frac{3}{4}$ ) renders exactness of translation impossible. The natural agreement of the adjective would lead to the meaning given by Mr. Aiyer, that the solstice occurred “on the expiry of the fourth part of the bright fortnight in the month of Māgha, that is, on the fourth or the fifth day after new-moon” (*op. cit.*, p. 81). But there is no certainty that *tribhāgaśeṣah* does not refer to the word month.<sup>1</sup> Nīlakaṇṭha here says the day is the eighth of the month. Mr. Aiyer takes the fifth lunar day after new moon as the real meaning (referring to N. on vi. 17. 2). Then, according to the Vedāṅga, he argues that this would imply that the solstice was the fourth of the five winter-solstices of a five-year cycle (*op. cit.*, p. 84), and uniting this with the assumed date of the Kali Yuga in 1177 B.C., he arrives at 1194–3 as the date of the war according to the epic itself. It is at least unfortunate that a stanza so important for this result should not be less ambiguous, for if *tribhāgaśeṣah* refers to *māsah* the whole argument is invalidated.

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<sup>1</sup> Mr. Aiyer's metrical objection (*loc. cit.*) is inconclusive, as he has admitted by letter.



Though Māgha is the solstice-month, neither this nor Cāitra nor Kārtika is the first month, but Mārgaśīrṣa. This, as is implied in the Gītā, stands in the same relation to the months as spring stands to the seasons.<sup>1</sup> In connection with the phrase *āgrahāyana*, this, like the epic list, points to Mārgaśīrṣa not as the best but as the formal first month (compare *āgrahāyaṇī* = *mārgaśīrṣī*, Vas. xi. 43). The list is given in xiii. 106. 17 f. and is as follows (with the alternate names supplied from another list at xiii. 109. 3 f.).<sup>2</sup>

Mārgaśīrṣa (November–December), Pāuṣa, Māgha, Bhagadāivata or Phālguna, Cāitra, Vāisākha, Jyēsthāmūla or Jyāiṣṭha (*jyēṣṭha*, · sic), Āśādhā, Śrāvaṇa, Proṣṭha- or Bhādra-pada, Āsvayuja or Āsvina, Kārtika.

If, as the epic says, the month begins with the new moon, Māgha would be from the new moon of December to the new moon of January. But this list probably implies that (as usual) Māgha is counted from the full moon in January and so on, Mārgaśīrṣa being from the full moon of November. Two passages in Virāṭa show that when the “seventh day” and “eighth day” are mentioned they refer to the days after the full moon. In iv. 47. 10–11, these days are cited merely as *saptamyām aparāhṇe* and *aṣṭamyām ādityasyo 'dayam prati*, “on the afternoon of the seventh and at sunrise on the eighth,” which days in 30. 26–27 are referred to as *kṛṣṇapakṣasya saptamīm* and *apare divase*, “on the seventh of the dark half and on the next day.” This is borne out by the fact that the pseudo-epic (like the law) gives as marching-months Mārgaśīrṣa, Phālguna, or Cāitra, which would be November, February, March (cf. Manu vii. 182, Vishnu, iii. 40), or more particularly the full moon of these months, Cāitrī, Mārgaśīrṣī; and in fact Kārtika, Kāumuda, overlaps autumn and winter, v. 83. 7:

*Kāumude māsi Revatyām śaradante himāgame,*

“on the arrival of cold, at the end of autumn, under the star Revatī, in the lotus-month;” xiii. 115. 76:

<sup>1</sup> Kṛṣṇa says (10. 35): *māsānām mārgaśīrṣo 'ham ṛtūnām kusumākaraḥ*. On this passage and the application of *āgrahāyana*, compare Tilak, *The Orion*, pp. 67 f. (Phālgunī, the first night of the year), 86 f., 153; Jacobi, *Beiträge zur Kenntniss der vedischen Chronologie*, p. 109.

<sup>2</sup> The object of this list is to show that Kṛṣṇa ought to be adored under a different name on the twelfth of each month.

*purā mānsam na bhakṣitam śāradam kāmudam māsam,*

“meat was not eaten of old during the autumnal month Kāmuda.”<sup>1</sup>

There is, then, a certain discrepancy in the matter of the epic months. The data as to marching, etc., above, would indicate that they were the months of the law-books, as follows, reckoning from full moon to full moon: Mārgaśīrṣa, November–December; Pāuṣa, December–January; Māgha, January–February; Phālguna, February–March; Cāitra, March–April; Vāiśākha, April–May; Jyāiṣṭha, May–June; Āṣāḍha, June–July; Śrāvaṇa, July–August; Bhādrapada, August–September; Āśvina, September–October; Kārtika, October–November. But this is incompatible with Māgha being well on its way by December 21st, as above.

The lunar day, *tithi*, masculine and feminine, gives rise to auspicious and inauspicious days, *sutithi*, *dustithi* (but *sudina* and *durdina* refer to the weather, e. g. i. 190. 46, *durdine meghasamplute*, “on a dull cloudy day”). The form is usually feminine, but *tithāu pārṇe*, i. 123. 6. The asterism and *muhūrta* are usually mentioned with the lucky or unlucky day, as in ii. 25. 4; *tithāu atha muhūrte ca nakṣatre cā 'bhipūjite*; xii. 100. 25, *tithinakṣatrapūjitaḥ*; xii. 180. 45, 46, *utā jātāḥ sunakṣatre sutithāu sumuhūrtajāḥ, nakṣatreṣv āsureṣv anye dustithāu durmuhūrtajāḥ*. Manu's derivation of *atithi* from *anityam sthitaḥ* is found, with a varied reading, in xiii. 97. 19 = M. iii. 102.

The holiest night is that of the full-moon of Kārtika, *pūṇyatamā rātriḥ parvasamdhāu sma śāradī kārtikī*, iii. 182. 16. The thirteenth day is a very lucky day, *praśastā*, iii. 134. 20, but not when sun and moon are eclipsed, vi. 3. 28, 32. The last stanza refers to the ill-luck of having a new moon on the thirteenth lunation, instead of the fourteenth, fifteenth or six-

<sup>1</sup> In i. 209. 30, *kāmudī* is either the moon or the full-moon night of this month :

*akālakāmudīm cāi 'va cakratuḥ sārvaikālikim,*

“they made the moon untimely (rise) at all times” (or the night come, v. l. *sarvakāminim*). According to the Suśruta, Mārgaśīrṣa is the second autumnal month.

teenth, and the ill-omen of the new moon on the thirteenth with a synchronous eclipse. But every unusual number anyway is ominous of evil. Thus headless trunks are especially portentous when they have many hands and feet, ix. 58. 56, and animals with four eyes and five feet, and women having four or five daughters at a birth are grouped together, as of very evil omen, vi. 3. 3 f. So the unusual day is the unlucky day apart from the eclipse:

*caturdaśim pañcadaśim bhūtapūrvām ca ṣoḍaśim  
imām tu nā 'bhijāne 'ham amāvāsyām trayodaśim  
candrasūryāv ubhāu grāstāu ekamāśim trayodaśim.*

It is added that an *aparvaṇi* eclipse portends disaster. With this stanza, vi. 3. 32, compare xvi. 2. 18, 19:

*evam paśyan Hṛṣīkeśaḥ samprāptam kālāparyayam  
trayodaśyām amāvāsyām tām drṣtvā prābravīd idam  
caturdaśi pañcadaśi kṛte 'yam Rāhuṇā punaḥ  
prāpte vāi Bhārata yuddhe prāptā cā 'dya kṣayāya naḥ.*

The "first day" of the month is generally given by the moon-day, but sometimes by the number, *Kārtikasya tu māsa-sya prathamē 'hani*, ii. 23. 29. The days of the new and full moon, *amāvāsyā*,<sup>1</sup> *amāvāsī*, and *pūrṇamāsī*, are also called *darśa* and *pūrṇamāsa*. The most prominent and auspicious days are those of the new and full moon, the thirteenth, and the eighth (end of a week), *Sinivālī*, *Anumatī*, *Kūhū* and *Rākā*, the first part of the day of the new moon and of the full moon, and the latter part of the day of the new moon and of the full moon, respectively (ĀB. vii. 11), viii. 34. 32, etc. The eighty-seventh section of *Anuśāsana* gives the rules for *Śrāddhas* (compare *Manu* iii. 273-276) on each day of both fortnights, the fourteenth of each being bad. To live one hundred years, one must be chaste on the days of the new and full moon, and on the eighth and fourteenth of all lunar fortnights: *amāvāsyām*

<sup>1</sup> This has the epithet *Śakradevatā*, *saptamāc cā 'pi divasād amāvāsyā bhaviṣyati saṁgrāmo yujyatām tasyām tām ākuḥ Śakradevatām*, "by the end of the week there will be a new moon; let the fight begin on that (new moon, for) they say that has Indra as its divinity," v. 142. 18. *Aiyer, op. cit.* p. 96, interprets as *Jyeṣṭhā* (as if *yām* stood for *tām*). Cf. *āindrā* (p. 32) and *śakra-dāivata*, BS. vii. 12.

*pāurnamāsyām caturdaśyām . . aṣṭamyām sarvapakṣāṇām*, xiii. 104. 29; Manu iv. 128. A particularly favorable eighth day is known as *kāmyāṣṭamī*, for gifts and oblations, xiii. 71. 49; 76. 19; 132. 7, the last referring to that of the dark half of Kārtika:

*Kārtike māsi cā 'śleṣā bahulasyā 'ṣṭamī śivā  
tena nakṣatrayogena yo dadāti guḍāudanam*, etc.

Special gods have special days. Kṛṣṇa's day is the twelfth (above). Skanda's days are the bright half's fifth and sixth, iii. 228. 15; 229. 52 (*śrījyṣṭaḥ pañcamīm Skandas tasmāc chrīpañcamī smṛtā . . ṣaṣṭhī mahātithih*). The Sun's day is the sixth or the seventh, *saptamyām atha vā ṣaṣṭhyām bhaktyā pūjām karoti yaḥ*, iii. 3. 64 (perhaps on account of the title *Saptasapti*, for *saptāśva*, ib. 63).

The name of the month is added in noun-form, *dvādaśyām māghamāse* or *jyāiṣṭhe māsi*, etc., xiii. 109, passim, or the adjective form of the month is joined to the name of the day, *cāitryā pāurnamāsī*, for initiating the king at the beginning of the horse-sacrifice; *māghā pāurnamāsī* after *dvādaśī māghamāsikī*, xiv. 72. 4; 85. 4-8; or the day is implied, *parām cāitrīm upasthitām*, ib. 76. 25 (*pari cāitrīm*, 81. 23).

**The Seasons:** These are six in number, e. g. iii. 134. 13. The group consists of Śīsira, cool-time, Vasanta (*kusumākara*), Easter-time, Grīṣma, heat-time, Varṣās, rains, Śaraḍ, autumn, Hemanta, snow-time. For Grīṣma is found also Uṣṇāṇi, heats, as in i. 222. 14, *uṣṇāṇi vartante*, "the heated term is at hand."<sup>1</sup> A favorite epic word for the hot spell is Nidāgha (Nidāghakāla, v. 26. 10) scorching-time:

*meghāv ivā 'tapāpāye dhārābhīḥ*, vii. 98. 14,  
with *uṣṇaparyāye meghānām iva vāgurāḥ*, ib. 32.

*nidāghavarṣikāu māsāu lokam gharmāṇśubhir yathā*  
(sc. *ahatām Pāṇḍavam*), vii. 30. 10 (v. l. C. 1331, *gharmāmbubhir*). So iii. 3. 49; vii. 146. 11; R. Gorr. v. 41. 25; and

<sup>1</sup> In xiv. 43. 8, *arke 'dhipatir uṣṇānām jyotiṣām indur ucyate*, "the sun is lord of hot (things); the moon, of stars," the heated term may be specially meant. In the next chapter the sun is called the beginning of light, *ādityo jyotiṣām ādir agnir bhūtādīr ucyate*, 44. 5.

*nāidāgha ṛtuḥ*, AV. ix. 5. 31, etc., all showing that Nidāgha is the heated term before the rains begin. The first rains are called Prāvṛṣ, whence the phrase of both epics, *yathā prāvṛṣi toyadāḥ*, vi. 81. 39; R. iii. 18. 23, etc., though there is no passage, I think, indicating that the whole rainy period was formally divided into two seasons, *varṣās*, *śarad*, *hemanta*, *vasanta*, *grīṣma*, *prāvṛṣ*, which division occurs first (as just cited) in the Suśruta (Thibaut, *Grundriss*, Astronomie, p. 11).

In the six-season division, the rains take four months and the remaining seasons, of which the first is Śisīra, must be divided between eight months. Compare *caturō vārṣikān māsān*, i. 62. 32, "through four rainy months;" and v. 35. 67:

*aṣṭamāsena tat kuryād yena varṣāḥ sukhaṁ vaset*,

where the eight months as a group are opposed to "rains," as also in Manu, ix. 304 f.

Though the earlier literature makes Vasanta the first season, that of the epic may begin with its expressed choice, and the seasons may be arranged about as follows: Śisīra, February; Vasanta, March–April;<sup>1</sup> Grīṣma, May till it rains; Varṣās, June–September; Śarad, October till cold weather; Hemanta, c. November–January. Hemanta is the season when the shadow is shortest, *mukhṛtaṁ sukhaṁ evāi 'tat tālacchāye 'va hāi-manī*, ii. 80. 50 (and elsewhere).<sup>2</sup> On the other hand, the Aśoka blooms at the end of Hemanta, *hemantānte 'śoka iva raktastabakamaṇḍitaḥ* (*babhāu Rāmaḥ*), v. 179. 31. The term, probably, is a general one, either ignoring or, according to locality, merging into Śisīra.<sup>3</sup> In the same way, Vasanta is an indefinite period, from the middle of February running through March and into April; as Grīṣma includes part of June. The rains may last four months, but there often are seasons when the rains are not more than two or three months, from the middle of June to the middle of August or September, instead

<sup>1</sup> The spring-festival comes on the thirteenth of the first half of Cāitra.

<sup>2</sup> Compare (at vi. 17. 2) the stanza of the Bhārata-sāvitṛī: *hemante prathame māsi śuklapakṣe trayodaśim pravṛttam Bhārataṁ yuddhaṁ nakṣatre Yamadāivate* (under Bharanī).

<sup>3</sup> So in Manu, iii. 281, "thrice in a year . . . in Hemanta, Grīṣma, Varṣās," as the three general seasons, though six are known, ib. 217; also iv. 26 *ṛtvante* is at the end of the four-month season.

of the "four rainy months," and then Śarad begins earlier. The coming of the rains varies by almost a month, so there is quite a margin here as well as in respect to the other seasons, which are really meteorological divisions shifting from year to year like our dog-days and Indian summer. They are always numbered as six, *ṛtavaḥ ṣaṭ*, v. 11. 15; viii. 34. 47, etc.,<sup>1</sup> but they are not enumerated as a group. According to iii. 3. 6, when the sun first took pity on starving man it began its work in the "northern course," and then passed into the "southern course," or in other words the year of the sun begins at the winter solstice, which in the epic is the time when begins the "northern course of six months," *ṣaṇmāsā uttarāyaṇam*, Gītā, 8. 24, to reach which Bhīṣma delayed his end, as explained above. The Gītā passage alone, however, may imply, as Mr. Tilak has suggested, through its collocation of fire, flame, day, bright half, and northern course, as opposed to smoke, night, dark half, and southern course, that the northern course was the fiery, flaming months, or in other words, that the year began not with the solstice but with the vernal equinox. This may well be the case, since the Gītā stanza is merely a recasting of a famous Vedic passage (Ch.U. iv. 15. 5, etc.).<sup>2</sup> The other Gītā passage, cited above, agrees with the older Brāhmaṇas in making spring the first season, whereas the pseudo-epic stanza cited above, p. 15, makes Śisīra the first season; a discrepancy consonant with the character of the heterogeneous epic.

A passage in Vana, 163. 34 f., says that the sun, after turning on his course, when desirous of making coolness, *śīśirāṇi*, favors the southern district. Then the cool-time arrives, *śāi-śīraḥ kālāḥ* (when cattle suffer, vi. 118. 8). Then returning, *nivṛttah*, he takes to himself the energy of all creatures, which

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<sup>1</sup> Three, five, six, or seven in early texts, e. g. ŚB. ii. 1. 1. 12-13, and above, p. 13, note 2.

<sup>2</sup> Compare Tilak, *The Orion*, p. 23 f. The northern course of the sun is the gods' abode, the Manes as opposed to the gods are as dark to light, ŚB. ii. 1. 3. 1 f. Here the gods are represented by the northern course, the bright half of the year (spring, summer, rains), the crescent (first half of) the moon, the day, and the forenoon, as opposed to the Manes, represented by autumn, winter, cool-time, etc., the gibbous moon, the night and the afternoon. It is added that spring is the priesthood, as the first (best) season and caste.

thereupon become sweaty, weary, and sleepy. Then, following a path incapable of being indicated, *anirdeśyam mārgam āvr̥tya*, the sun emits rain. Here the "cool-time" marks the beginning of winter, as the time of fatigue indicates summer. Instead of *bhajate* one might expect *tyajate*, as *tataḥ* following seems to show that the immediate result is coolness. But the words may mean only that after the southern course has been completed the cool time comes; though the southern course appears to precede the cool time immediately, which would require the latter to begin with the early autumn instead of the solstice, and the former to begin with the equinox:

*tathā tamisrahā devo mayūkhāir bhāvayan jagat  
mārgam etad asambādham ādityaḥ parivartate  
sisṛkṣuḥ śīśirāṇy eva dakṣiṇām bhajate diśam  
tataḥ sarvāṇi bhūtāni kālo 'bhyarchati śāśirah.*

The rainy season is described in iii. 182; it ends some time before the full moon of Kārtika (16). There is, I believe, no passage in the epic grouping the months, beginning with Māgha, in pairs according to the seasons, as they are both defined by native lexicographers and grouped in ĀB. iv. 26 (beginning with *vāsantikāu māsāu*); ŚB. iv. 3. 1. 14 f.; or as ib. viii. 3. 2. 5, *dvāu hi māsāv ṛtuḥ*, limits the season. At present the natives reckon three seasons of four months each, "hot, cold, and stormy," JASB., 1901, p. 57 of Part III.

#### THE ASTERISMS.

Though the "star-man," *nākṣatra*, xii. 76. 6, perhaps a mere fortune-teller,<sup>1</sup> is a despicable kind of priest, the stars are the object of constant study and even the asterisms are frequently brought into the epic narrative, sometimes formally, as in the lists spoken of below, sometimes incidentally, as when a "Tīrtha of the Pleiades and Maghā" is mentioned, or when "Rohiṇī surrounded with stars," *tārābhiḥ*, serves the poet as a simile for a

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<sup>1</sup> I am not quite sure of this, for the astrologer is also called a *sāṃvat-sara* and he is no better than a Śūdra, xiii. 135. 11, and yet this is the very title given to Garga, xii. 59. 111 (other references in my *Great Epic*, p. 15). The asterisms, though admitted into the ritual, are clearly little regarded in ŚB. ii. 1. 2. 19. Here, by the way, ib. 2, no asterisms have more than four stars except the Pleiades.

queen at court, ii. 58. 27. The latter star, Aldebaran, is the best-beloved wife of the Moon-god, and stirs up jealousy among the other asterisms, ix. 35. 47 f. Another story, reported below, attributes jealousy to Abhijit, "younger sister" of Rohiṇī, and tells how the six Pleiades, with the Fire-god as the seventh, replace her, iii. 134. 13; ix. 44. 12, as six; "seven-headed with Agni as divinity," iii. 230. 11. The Pleiades are the asterism of the Sword as Justice, xii. 166. 82. But apart from the Pleiades and Aldebaran, there is little notice taken of the asterisms, except when the planets and asterisms give portents, till we come to the formal lists of the latter in the late epic tables. Apart from the asterisms and planets, however, the Seers, the Great Bear and Dhruva, the Pole star, are not infrequently lauded and described: A saint-star is located "midway between the Holy Seers (the Great Bear) and Dhruva, the son of Uttānapāda" (Puranic), xiii. 3. 15. These Seers rise and set in the royal North (*diśām udīcī rājā*, xiv. 43. 10) at Mount Meru, Mahā Meru, iii. 163. 15, round which go daily the sun and moon and other lights of heaven. Setting there, *astam prāpya*, the sun goes north, after the twilight time, *saṁdhyām atikramya . . . udīcīm bhajate kāṣṭhām diśām* (as phrased elsewhere, xiii. 168. 6, *dr̥ṣṭvā [Bhīṣmaḥ] nivr̥ttam ādityam pravṛttam co 'ttarāyanam*); then eastward turning he goes on again. And even so, dividing the months, *māsau vibhajan kāle bahudhā parvasaṁdhiṣu*, goes the moon with the asterisms, *nakṣatrāṇi saha gacchati*, and having gone about Meru goes again to Mount Mandara, ib. 27 f. Compare v. 111. 14, "Here (in the North) are the Seven Seers, Arundhatī, and Svāti, which rises here, and (the year) Pitāmaha" (as sacrifice).<sup>1</sup>

Since the asterisms are known by name even in the Rig Veda, i. 24. 9, Śatam-bhiṣajaḥ; x. (19. 1 ?) 85. 13, Maghā(?) and Arjunī; while the Atharva Veda, xix. 7, and other Vedic works presumably earlier, give lists of them, it may be assumed that, whatever the date of the epic, the poets were familiar with all the asterisms, and it is to be expected that the later epic will maintain its usual character by endorsing both lists, that of the twenty-seven

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<sup>1</sup> *atra te ṛṣayaḥ sapta devī cā 'rundhatī tathā, atra tiṣṭhati vāi svātir atrā 'syā udayaḥ smṛtaḥ, atra yajñam samāsādya dhruvam sthātā pitā-mahaḥ*, i. e. the year.



asterisms and that of the twenty-eight. Whether the asterisms were first counted as twenty-seven or as twenty-eight may still be doubtful (twenty-eight is more likely);<sup>1</sup> but the constant later view was that they were twenty-seven, and this is the current epic view, as represented in the usual ascription of twenty-seven wives to Soma. They are *nakṣatrayoginyāḥ*, *nakṣatrayoganīratāḥ*, and are counted as seven and twenty, i. 66. 16-17; ix. 35. 45; xii. 207. 24; 343. 57, etc.

The twenty-seven asterisms are divided into nine-day weeks (*navarātra*) by groups of three (of nine each, beginning with *Āśvinī*, *Maghā*, *Mūla*, respectively, according to the scholiast), and, according to this division, a *gr̥dhra*, or evil heavenly body, *pāpagraha*, has a different effect on the fortunes of men, if we may further trust this expansion on the part of the scholiast of B. vi. 3. 31,

*triṣu sarveṣu nakṣatranakṣatreṣu, viśāmpate,  
gr̥dhraḥ sampatate śīrṣam (!) janayan bhayam uttamam,*

which might refer to a three-fold division of the year according to the seasons already mentioned.<sup>2</sup> The *R̥bhus*, however, are mentioned merely as divinities of the gods, eternal and changeless under the aeonic changes, *devadevāḥ sanātānāḥ*, iii. 261. 19-22:

*na kalpaparivartesu parivartanti te tathā.*

The twenty-eight asterisms are said to "enter the circle of the sun" in the West and then, on account of their association with the moon, to fall out of the sun again, after twenty-eight nights are past, v. 110. 15-16:

*ataḥ prabhṛti sūryasya tiryag āvartate gatīḥ  
atra jyotiṃśi sarvāṇi viśanty ādityamaṇḍalam  
aṣṭāvīṣatirātraṁ ca caṅkramya saha bhānunā  
niṣpatanti punaḥ sūryāt somasaṅgyogayogataḥ.*

Twenty-eight asterisms are implied at ix. 34. 6, where forty-two days pass from *Puṣya* to *Śravaṇa* (= 22 + 20, *Puṣya* being sixth and *Śravaṇa* twenty-first).

<sup>1</sup> But cf. TS. i. 7. 7. 2; ŚB. x. 5. 4. 5; Whitney, OLS. ii. p. 360 f., with citations.

<sup>2</sup> C. 98 has *triṣu sarveṣu pūrveṣu nakṣatreṣu . . . śīrṣe*. With B. cf. RV. x. 61. 10 f., on the *Navagvas*.

The full list of the asterisms, as developed at xiii. 64, is as follows. I supply the equivalent forms from other passages, chiefly in the same book (giving only epic data); see. *nakṣatram*:

1, Kṛttikās, Kṛttikāyoga, *āgneyam*, *vahnidāivatam*; 2, Rohiṇī, *prājāpatyam*, *dhruvam*; 3, Mṛgaśīras, Mṛgottama, *soma-dāivatam*; 4, Ārdrā; 5, Punarvasu, also dual, viii. 49. 28, required, where C. 2,328 has sg.; 6, Puṣya,<sup>1</sup> Tīṣya; 7, Āśleṣā, sg. and pl.; 8, Maghā (N. *pitryam*), sg. and pl.; 9 and 10, Phalgunī, *pūrvā*, *uttarā*, *uttarāviṣaya*; sg., pl., dual,<sup>2</sup> *bha-gadāivatam*; 11, Hasta, *sāvitram*; 12, Citrā (Mitra? see below); 13, Svāti, Svātī, Svātiyoga; 14, Viśākhā, sg., dual, pl.; 15, Anurādhā, sg. and pl., *māitram*; 16, Jyesthā, *āindram*; 17, Mūla; 18 and 19, Aśādhā, *pūrvā*, *uttarā*; 20, Abhijit, Abhijita(-yoga); 21, Śravaṇa, sg. and pl.; 22, Dhaniṣṭhā, sg. and pl.; 23, Śatabhiṣā(-yoga), *vāruṇam*; 24 and 25, Proṣṭha-, Bhādrapadā, Bhādrapada (-yoga), *pūrvā*, *uttarā* (-yoga);<sup>3</sup> 26, Revatī; 27, Aśvinī, sg. and pl.; 28, Bharanī, sg. and pl.

Śravaṣṭhā, the older name of Dhaniṣṭhā, does not appear to be used. Abhijit is lacking in the alternate list (below). The addition of *yoga* is common, the asterism appearing either as a noun (above) or as an adjective, as, for example, in *adya pūṣyaṇi yogam upāiti candramāh*, “to-day the moon enters its Puṣya-conjunction” (a suitable time for a wedding), i. 198. 5. In the same way, *maghāviṣayagaḥ somah*, vi. 17. 2.

Like the *nakṣatriyaḥ prajāpatiḥ*, “whose hand is Hasta and head is Citrā,” in TB. i. 5. 2. 2, is the identification made during the moon-rite, *cāndravrata*, at xiii. 110. 2 f., in which the worshipper identifies himself with the moon as anthropomorphized from the feet up in the asterisms.<sup>4</sup> The month is Mārgaśīrṣa, and the moon’s feet are Mūla; the knees and thighs,

<sup>1</sup> Instrumental asterism, with which, all the others locative. So in the list at xiii. 89, except for Hasta and Abhijit (means): *hastena phalabhāg*; *śrāddham tv abhijitā kurvan bhiṣak siddhim avāpnuyāt*, śl. 11.

<sup>2</sup> *uttarābhyām phalgunābhyām nakṣatrābhyām ahaṁ divā, jāto hima-vatāḥ pṛṣṭhe, tena mām Phalguniāṁ viduḥ*, iv. 44. 16 (cf. Arjuna, Arjuni=Phalgunī).

<sup>3</sup> V. 114. 3: *nityam proṣṭhapadābhyām ca śukre dhanapatāu tathā, manuṣyebhyaḥ samādatte śukraḥ (dhanam)*; xiii. 89. 13: *pūrvaproṣṭha-padāḥ kurvan bahūn vindaty ajāvikān, uttarāsu prakurvāṇo vindate gāḥ sahasraśaḥ*.

<sup>4</sup> Compare also the *nakṣatrapuruṣaka* of BS. cv.

Aśvinī and Aśādhā; the hands, Hasta, etc.; while Citrā is replaced in B. by Mitra (C. has *citram*, sic), as follows: *netre mṛgaśiro vidyāl lalāte mitram eva tu*, śl. 8 (probably metrical). In this list the double asterisms are Phālgunī (sic), Bhādrapada, sg.; Aśādhē, dual; while Nos. 8, 15, 21, 27, 28 are singular, and Nos. 7, 14, 22 are plural.

Various periphrases take the place of the names of the asterisms elsewhere in the epic. In xiii. 126. 36, *gajacchāyāyām pūrvasyām kutape . . . yadā Bhādrapade māsi bhavate bahule maghā*, the "elephant's shadow," as in Manu iii. 274, Yāj. i. 218, is probably a constellation. According to the scholiast at xiv. 63, 18, *nakṣatre 'hani ca dhruve*, both Rohiṇī and the Uttarātraya (cf. BS. *loc. cit.*, PW. s. v.) bear the name *dhruva* (Nos. 2 and 10, 19, 25). No. 1 is *vahnidāivatam* also in i. 221. 85; No. 16, Jyeṣṭhā, called by N. *jyeṣṭhānakṣatra*, is regarded as Indra's (*āindram*, i. 123. 6). The place of Anurādhā, No. 15, is taken by *māitranakṣatra-yoga* in ix. 35. 14. In xiii. 89. 12, Śatabhiṣā (epic for *-bhiṣaj*), No. 23, is the *nakṣatram vāruṇam*; and in i. 8. 16, Phalgunī (*uttarā*, No. 10) is (for marriage) *bhagadāivatam nakṣatram*. The "five-star" asterism, Hasta, No. 11, is called *sāvitram pañcatāram*, i. 135. 30. On *Śakra-devatā* (not of No. 16, Jyeṣṭhā, but) *amāvāsyā*, see above, p. 24, note. According to xiii. 104. 127 f., one should not perform a Śrāddha under one's natal asterism, nor under the two Proṣṭhapadās, nor under Āgneya (the Kṛttikās). The name Tiṣya for Puṣya, No. 6, occurs in connection with the planet Brhaspati in the well-known prophecy at iii. 190. 90 f.:

*yadā sūryaś ca candraś ca tathā Tiṣya-Brhaspatī  
ekarāśāu sameṣyanti prapatsyati tadā kṛtam,*

"the perfect age will come again when sun and moon and the asterism Tiṣya with the planet Jupiter shall meet in one zodiacal sign."<sup>1</sup> Cf. *brahmarāśi* below. Possibly the (solar) zodiac here referred to may have an earthly counterpart in the process of divination known as *mṛgacakra*, alluded to at v. 48. 98 f.:

<sup>1</sup> The epic poet does not hesitate to make the planets Jupiter and Saturn stay a year in one asterism (as a bad sign), vi. 3. 27. See under Planets, below. Tiṣya was the birth-place of Jupiter, according to TB. iii. 1. 1. 5, cited by Tilak, *The Orion*, p. 161.

*sānvatsarā jyotiṣi cā 'bhiyuktā  
nakṣatrayogesu ca niścayaññāḥ  
uccāvacaṁ dāivayuktaṁ rahasyaṁ  
divyāḥ praśnā mṛgacakrā muhūrtaḥ,*

“astrologers and star-seers and those that tell fate by asterisms, secret prognostications, oracles, wheels of fortune, soothsayers(?)” I take *muhūrta* to be a metrical equivalent to *māuhūrta*, a soothsayer—astrologer. The latter word is found in xii. 121. 46, as in later literature. As to *mṛgacakra*, “animal-wheel,” it seems to be what the modern Hindus call the “wheel of the nine planets” (compare *śatapada* = *cakra*), a sooth-saying device much in evidence at the beginning of the plague in 1896. The commentator explains it doubtfully as a *pūrvanipāta* for *cakramṛga* (asking questions with a wheel), according to the use prescribed in the Śivaite scriptures; the questions being astrological, “what is the asterism, by what planet is one injured?” Perhaps it is a zodiac wheel.

As in the stanza cited above, the asterisms are frequently brought into connection with the planets. Thus, in iii. 281. 6, “he looked like Saturn entering Rohiṇī.” Another example occurs in xiii. 25. 22, where one is advised to perform ablutions at Great-Ganges, *kṛttikāṅgārake*, “when Mars is in the Pleiades.”

In indicating time, the day and asterism are usually in the locative; the month, locative or genitive: *aṣṭame 'hani Roṇiṇyām prayātāḥ Phālgunasya te*, “they started on the eighth (day) of Phālguna under the asterism Rohiṇī,” i. 145. 34; *kṛṣṇapakṣe caturdaśyām rātrāu*, “at night on the fourteenth (day) in the fortnight after the full moon,” i. 147. 4; *Mārgaśīrṣasya māsasya candre Mūlena saṁyute*, “when the moon of the month Mārgaśīrṣa is in conjunction with the asterism Mūla,” xiii. 110. 3; *Pāuṣamāsasya śukle vāi yadā yujyeta Rohiṇī*, “when Rohiṇī is in conjunction in the fortnight before the moon is full in the month Pāuṣa,” ib. 126. 48. With the month in the locative and the fortnight in the genitive: *Kārtike māsi cā 'śleṣābāhulasyā 'ṣṭamī*, “the eighth (day) of the fortnight after the full moon in the month Kārtika under the asterism Āśleṣā,” ib. 132. 7. With the new (and “full-moon”) day, “month” is unnecessary (in xiii. 134. 4, *somasya 'tīṣṭhamānasya*

*pāurnamāsyām baliṃ haret*, the moon is object, “one should make an offering to the moon as it is rising on the full-moon night”).

The passage referred to above, p. 15, containing the words *Śravaṇādīni ṛkṣāṇi*, “the asterisms begin with Śravaṇa,” is of some importance for the date of the epic as well as for the way it was put together. In the lists already cited, the Kṛttikās, or Pleiades, begin the series of asterisms, while Śravaṇa is the twenty-first in the list, coming just before Dhaniṣṭhā = Śraviṣṭhā. As late as Yājñavalkya’s law-book, i. 267, the Pleiades hold this position, as opposed to the still later scheme (since c. 490 A.D.) beginning with Aśvinī (to indicate the vernal equinox). The Vedāṅga Jyotiṣa list begins with Śraviṣṭhā, and Garga says that the Kṛttikās are the first asterism for the ritual, while Śraviṣṭhā is first for ordinary reckoning: *karmasu kṛttikāḥ prathamam (nakṣatram) śraviṣṭhā tu saṁkhyāyāḥ* (cited by Tilak, *The Orion*, p. 30).

Now we can scarcely believe that the stanza stating that Śravaṇa is the first asterism refers only to the quality of the asterism as the best or foremost, since in the same stanza the relation of day to night is expressly that of priority and not of superiority. Nor is there here any reference to an “abortive attempt” to reform the calendar, as is claimed by Tilak, *op. cit.*, p. 216. The fact is that even in i. 71. 34, where the change of the sphere is described, the act is not spoken of as abortive, but as one that succeeded. The translation of this latter passage, however, is not so certain as Tilak assumes; though the change of asterisms is apparently described as actually occurring. We are told that Viśvāmitra, in his anger, did several wonderful things. As he caused the river, Kāuśiki, to change its name to Pārā, so also “he made another world with a right arrangement of asterisms,”

*cakārā ’nyam ca lokam vāi kruddho nakṣatrasampadā.*

Then follows:

*pratiśravaṇapūrvāṇi nakṣatrāṇi cakāra yaḥ,*

the obvious, though rather pointless meaning of which would be that “he made asterisms which had a prior promise.” By separating the compound and giving *pūrva* the sense of *ādi*, Tilak arrives at the meaning “he made the asterisms begin with

Śravaṇa." But even if this be a doubtful rendering, we have here the statement that Viśvāmitra did rearrange the asterisms, and in xiv. 44. 2, the statement (but without allusion to this story) that Śravaṇa is the first asterism. In another passage, which describes how Abhijit, because she was jealous of Rohiṇī, her elder sister, retired from the group and became "a star fallen from heaven," *nakṣatram gaganāc cyutam*, Abhijit is replaced by the Pleiades. This is a tale, thus far without historical meaning (except as showing that Abhijit was regarded as originally in the group); but in the quandary as to what was to be done when Abhijit retired, it is said that

*dhanisthādis tadā kālo brahmaṇā parikalpitah,*

"time was arranged by Brahman to begin with Dhanisthā," iii. 230. 10, which can mean only that this asterism was the first of the group.

We thus have a legend peculiar to the later epic describing a rearrangement of the asterisms; a decided difference between different parts of the epic in regard to the first asterism; and the probability that Śravaṇa was made the first asterism because the Vedāṅga system was no longer suited to the seasons, which had already receded a fortnight. In other words, the substitution of Śravaṇa points to a late date (approximating the modern substitution of Aśvinī) for these passages in books i. and xiv.

In the Purāṇas and classical literature, the *nakṣatrāṇi* are called *ṛkṣāṇi*, and this name is found appropriately enough in what is most certainly a pseudo-epic passage, xiii. 14. 37,

*stobhā ṛkṣāṇi pitaro grahāḥ,*

where the context shows the special meaning to be that of *śravaṇādīni ṛkṣāṇi* in the other verse from the pseudo-epic, upon which I have just animadverted.

Of the far-reaching results drawn by Mr. Tilak from a study of the stars as affecting the date of the earliest Vedic literature, this is scarcely the place to speak, since my study is confined as closely as is convenient to epic conditions. But I would suggest the consideration of two facts. The first is that the loose and casual references to the minor heavenly bodies, and the

indifference with which they were regarded by the earliest depositaries of sacred wisdom make it improbable that any careful astronomical calculations were based upon them at a still earlier, pre-Vedic, period. The second is rather a corollary than a contradiction of this fact, namely, that though but little used as chronological guides, the stars are often regarded in their more obvious appearance, and there is no objection to postulating a primitive acquaintance with and veneration for brilliant stars, especially groups of stars, marking a seasonal change. Thus the savages of the South Sea Islands, though they can scarcely be said either to be star-worshippers in general, or to measure time by the stars, reckon the year (with thirteen moons) as beginning with the rising of the Pleiades just after sunset, about the middle of December, and "pay idolatrous worship to them."<sup>1</sup>

#### THE PLANETS.

The planets, or rather the *grahas*, which include the planets, are reckoned as a group of five (so RV. i. 105. 10 ?) or seven in the early epic; but the later epic makes them nine in number. The order in which they are named is interrupted by the intrusion of the additional *grahas* and even of gods, but it appears in xiii. 166. 17 as Venus, Jupiter, Mars, Mercury, Saturn, where Bhāuma, for Mars, is noteworthy. The eclipse-demon, Rāhu (whose dimensions, according to the epic, together with those of the sun and moon I have given in this Journal, vol. xxiii. p. 154), here appears between Budha and Śanāīscara (Mercury and Saturn). In iii. 3. 17, the order is Jupiter, Venus, Mercury, Mars, Saturn. Here Mars is, as usual, Aṅāraka. The group begins with the moon and Saturn is added after Indra, the sun, Agni, and Kṛṣṇa; the whole group being preceded by the group of the five elements:

*somo bṛhaspatīḥ śukro budho 'ṅāraka eva ca  
indro vivasvān dīptāṅśuḥ śuciḥ śāurīḥ śanāīscarāḥ.*

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<sup>1</sup> Compare Gill, *Myths and Songs*, p. 317: "The Pleiades were worshipped [as harbingers of the new year] at Danger Island, and at the Penrhyns, down to the introduction of Christianity in 1857. In many islands extravagant joy is still manifested at the rising of this constellation out of the ocean."

According to v. 34. 54, the stars, *nakṣatrāṇi*, are affected by the *grahas* (N. sun, etc.). In vi. 17. 2 are mentioned “seven great *grahas*,” *mahāgrahāḥ*, where the scholiast says that there are nine in all, “as Rāhu and Ketu are to be added as *upagrahas*.” These *upagrahas* are recognized late in the epic, being mentioned in the Mārkaṇḍeya episode, iii. 227. 1, with the *grahas*, seers, and mother-goddesses. In vi. 77. 11, where the sun is surrounded by *krūrā mahāgrahāḥ*, Rāhu, though the number is not stated, may be included. The technical name for hostile planets is here used. So in vii. 137. 23, “the seven Mahārathas oppressed Bhīma as the seven *grahas* (oppress) the moon at the destruction of living creatures” (*somaṁ sapta grahā iva*; compare the “seven suns” active in *pralaya*). In viii. 37. 4,

*nīḥsaranto vyadrśyanta sūryāt sapta mahāgrahāḥ.*

The meaning, according to the scholiast, is that the *grahas* appeared advancing with the sun as the first of the seven.

In all these cases, when the number is given we find it to be not more than seven. But the ascending and descending node, Rāhu, Ketu, are mentioned together with the sun and moon and the planets Saturn, Mars, Jupiter with Venus, Mercury, in xiii. 17. 38, if we may trust the scholiast, who says that *grahapati* is for Maṅgala (Mars) and *vara* is for Brhaspati and Śukra; *atri* being for Budha and Śani (as elsewhere) for Śanāīscara. They are forms of God, who is the *nidhi*, highest number, the thousand-eyed *soma*, the *nakṣatrasūdhaka*, and

*candraḥ sūryaḥ śaniḥ ketur graho grahapatir varaḥ,  
Atriḥ, etc.*

While it is doubtful whether the scholiast is right in this case, another late passage expressly reckons the *grahas* as nine, iv. 2. 21:

*yam manye dvādaśaṁ rudram ādityānāṁ trayodaśam  
vasūnāṁ navamam manye grahāṇāṁ daśanaṁ tathā,*

where the tenth *graha* implies nine others. The sun, though sometimes not a *graha*, is expressly called a *graha*, and is lord of *grahas*, *sūryo grahāṇām adhipo nakṣatrāṇāṁ ca candra-māh*, xiv. 43. 6. At iii. 200. 85, are mentioned *grahāḥ sūryā-dayo divi*, “the *grahas* beginning with the sun,” all being reckoned as *dāruṇaḥ* or *śivāḥ*, unfavorable or favorable, according



to circumstances. Conversely, the planet Saturn is the son of the sun and Jupiter is reckoned among the suns, *ādityeṣv eva ganyate*, in i. 66. 39, as Śukra (Venus) is Bhṛgu's son, a planet meteorologically active, *varṣāvarṣe bhayābhaye*, ib. 42, though regarded also as the female side of Brhaspati (Venus and Jupiter).

Sporadic mention of the planets (five in number in vi. 100. 37, *grahāḥ pañca*, opposed to the sun; and to the moon, ib. 38) is common enough. In vi. 101. 59, two heroes are compared to Mercury and Venus; and ib. 104. 21, to Mercury and Saturn. The last is named also in ix. 16. 10, (*raṇe*) *candramaso 'bhyāśe śanāiścāra iva grahaḥ*, Saturn near the moon illustrating Śalya near Yudhiṣṭhira in battle. Such references are found not infrequently: *aṅgāraka-budhāv iva*, two heroes, "appeared like Mars and Mercury," viii. 15. 16; *nakṣatram abhito vyomni śukrā-ṅgirasayor iva (yuddham)*, a battle such "as in heaven is the battle of Venus and Jupiter respecting an asterism," ib. 17. 1; *vakrātivakragamanād aṅgāraka iva grahaḥ*, a hero storms about "like the planet Mars returning in his orbit," ib. 19. 1.

In the same book, in which occur most of these allusions, viii. 18. 5, another reference has a pun on the word *graha*, the "seizer:"<sup>1</sup>

*sa Māghadānām pravaro 'ṅkuśagrahe  
grāhe 'prasahyo vikāco yathā grahaḥ,*

where *vikāca* is "the headless one," Rāhu, who is here a "seizer," but is not grouped with the planets.

Bad signs are given by the planets. In vi. 3. 12 f., the "white *graha*," Ketu, passing Citrā stands still; a great *graha*, a comet, *dhūmaketu*, attacks Puṣya (the warrior's asterism); Mars, *aṅgāraka*, turns among the Maghās, *maghāsu vakrah*; and Jupiter turns in Śravaṇa; the sun's son, Saturn, attacks Pūrvā Phalgunī, *bhagaṇi nakṣatram*; Venus shines in Pūrvā Proṣṭhapadā and going about in Uttarā associated (with an *upa-graha*) desires attack; the white *graha* attacking Jyēṣṭhā, *āindram nakṣatram*, stands still. The Pole-star (? *dhruva*) flames;

<sup>1</sup> Compare ŚB. iv. 6. 5. 1 f., where the sun is a *graha* and "the whole Brāhmaṇa is a play on the word *graha*," as Eggeling says (cf. ib. xiv. 1. 4. 2).

sun and moon distress Rōhiṇī; between Citrā and Svāti is the fierce *graha*; and Mars, *lohītāṅga*, turns about Śravaṇa, called here (so N.) *Brahma-rāṣi*. So in v. 143. 8 f., and viii. 94. 49 f., the “son of the moon,” Mercury, goes transversely, being fire-colored; while Jupiter, encircling Rōhiṇī, becomes moon-colored. In ix. 11. 17, Venus and Mars with Mercury go behind the Pandus, portending the fate of their foes. Here Venus is “Bhṛgu’s son” and Mars is the “son of earth,” *dharāputra*, while Mercury is again the “son of the moon,” *śaśija*. When the moon is upside down and the planets encircle the sun to the left, something terrible will happen: *apasavyam grahās cakrur alaksmānam divākaram, avāksirās ca bhagavān upātiṣṭhata candramāḥ*, vi. 112. 12.

There is no passage in the epic which gives the Greek order of the planets, Sun, Moon, Mars, Mercury, Jupiter, Venus, Saturn, and this fact, according to Professor Jacobi, ZDMG. xxx, p. 307, would imply that the date of composition was not later than the third century A.D. This would be valid for the greater part of the epic, but would not exclude the possibility of still later additions having nothing to do with planets. The rare mention of the group of nine *grahas*, confined to what we may unhesitatingly call the later part of the epic, shows that the *grahas* in the early epic were reckoned only as five, or seven with the sun and moon added, without recognition of the nodes, Ketu and Rāhu, as part of the “group of nine planets.”

That the heavenly bodies are sentient creatures needs scarcely be observed. The planets have merit, *punya*, after losing which, *kṣīṇapunyaḥ*, they fall (as shooting stars); and they become sad when they see distressing sights. Thus in i. 210. 26: “moon and sun, the *grahas*, the stars, the asterisms, (all) the inhabitants of the sky, beheld the deed, became despondent.” For varied views on this point, see my *Great Epic*, p. 380. The formal adoration of planets in connection with Gaṇeśa is recommended in Yāj. i. 292 f., who recognizes nine *grahas*, sun, moon, son of earth, son of moon, Brhaspati, Śukra, Śanāścara, Rāhu, Ketu. Their worship consists in making metal or pictured models, to which are given clothes, flowers, incense, rice, etc.; and to each planet eight hundred and twenty-eight pieces of a special kind of wood (burned for each); rites later than epic ideas, to judge from silence on a theme so attractive.

### SUN, YEARS, AGES, AEONS, AND CYCLES.

The extended astronomical phraseology of the late epic may be illustrated by the gift-laud in iii. 200. 125 f., where occurs the advanced technicality implied in the word *ṣaḍaśītimukha*. After stating that a gift at the time of the new moon or the full moon has a double value and that a gift at a season-time would be of ten-fold value, *parvasu dviguṇaṁ dānam ṛtāu daśaguṇaṁ bhavet*, the poet adds that the reward would be endless if one gave gifts at the equinox, *viṣuva (tulāmesasaṁkrāntyoḥ, N.)*, when the sun is *ṣaḍaśītimukheṣu*, that is (the sun's path being divided into arcs of 86°, commencing with the autumnal equinox, JAOS. vi. p. 410 f.), entering Gemini, Virgo, and Pisces (*mithunakanyāmīnasasāṁkrāntiṣu, N.*), or at the eclipse, *uparāge* (eclipsed is *upapluta*, passim), of the moon and sun. This information is conveyed in *ślokas*. Part of it is then repeated, amplified, and embellished by being stated over again more artistically:<sup>1</sup>

*ṛtuṣu daśaguṇaṁ vadanti dattaṁ  
śataguṇaṁ ṛtvayanādiṣu dhruvam  
bhavati sahasraguṇaṁ dīnasya Rāhor  
viṣuvati cā 'kṣayam āśnute phalam.*

At the same time, though one or two other passages (see above, p. 32) point to the recognition of the solar zodiac, I cannot believe that this was known in the epic period; for in that case there would inevitably have been references to some *samkrānti*, which term, however, does not once appear.

Time is often measured by groups of five divisions, either as "months, seasons, semesters, years, ages," as in xii. 47. 66, or without ages and with day and night, of which the world is made: *ahorātramaye loke*<sup>2</sup> . . . *mṛtyur grasati bhūtāni pavanam pannage yathā*, xii. 299. 29. It is this latter group which Nīlakaṇṭha thinks has given to Viṣṇu, in xii. 339 (66), his title of Pañcakālakartṛpati, "lord of the five makers of time;" though as Pañcarātrika follows and as Nīlakaṇṭha also gives the five as those of Gītā, 18. 15, the real application of the epithet remains doubtful. In xiii. 149. 60, Viṣṇu is *nakṣatranemir nakṣatrī*.

<sup>1</sup> For the irregular form of the meter, see my *Great Epic*, p. 344.

<sup>2</sup> Compare the *Anugītā*, xiv. 45. 2 f., where the "wheel of time" turns on day and night, *ahorātraparikṣepam*, but is counted, *gaṇitam*, by months and half-months.

The period of day and night, the months, and the seasons having been discussed, there remain the year and greater periods of time. The year (*prativatsara*, ii. 74. 19, and *śārada*, iii. 99. 24, are unique; other designations are those current, *varṣa*, *parivatsara*, etc.) is divided most frequently (as in RV. i. 164. 48, etc.) in metaphors. In the “forest of the great world,” *kāntāra*, there is “a black and white elephant, having six faces, twelve feet,” the year with its dark and light halves of the month, seasons, and months, xi. 5. 15; 6. 11. Two men dance hand in hand and six men play with golden dice (day and night and the six seasons), xiii. 42 and 43. 4 f. The whole year is measured by the “twelve-fold sun,” which is spoken of as becoming “twelve suns,” *dvādaśādityatām gataḥ*, iii. 3. 59, *dvādaśātman*, ib. 26; *dvādaśā 'dityān kathayantī 'ha dhīrāḥ*, iii. 134. 19. This is God's form at the destruction of the universe: “as twelve suns” he destroys, xii. 313. 4. Again, the year is a wheel of twelve spokes, turned by six boys, while two girls weave black and white threads; this wheel, however, also having three hundred and sixty spokes and twenty-four divisions, *parvayoga*, i. 3. 146 (also xii. 246. 32). Compare iii. 133. 24 f.:

*triṃśakadvādaśānśasya caturviṃśatiparvaṇaḥ  
yaḥ triṣaṣṭiśatārasya vedā 'rtham sa paraḥ kaviḥ  
caturviṃśatiparva . . . ṣaṇnābhī dvādaśapradhī  
tat triṣaṣṭiśatāraṁ vāi cakram,*

which adds the “group of thirty,” *triṃśaka*, as one of the divisions, twelve months of thirty days each. In xiii. 159. 23, the year as the wheel of time has three naves, seven steeds, and three divisions, *triṇābhī*, *saptāśvayuktam*, *tridhāma*; the first implying the periods of cold, heat, rain; the last, rain, wind, heat; according to the scholiast (compare RV. i. 164. 2). In i. 3. 58, the weaving of the year appears again, but a new metaphor follows, that of three hundred and sixty cows having one calf, ib. 60; and ib. 61 the wheel again has seven hundred and twenty spokes. The wheel of time is analyzed in ii. 11. 37, as having divisions of *kṣaṇas*, *lavas*, *muhūrtas*, day and night, half months, months, seasons (six), years, the cycle of five years, *pañcayuga*, and the “four-fold day and night,” *ahorātraś caturvidhaḥ*, that is, as they belong to men, Manes (whose day is a moon-month), to gods (measured by years), and to Brah-

man (measured by ages). This is the sole passage in the epic recognizing the five-year cycle by that name (Brāh. *pañcakaṁ yugam*). It may be inferred from the attempt made to bring the solar and lunar year into line in iv. 52. 3,

*pañcame pañcame varṣe dvāu māsāv upajāyataḥ,*

where, in Vedic phrase, RV. i. 25. 8, there is a calculation of the months "born after;" though here an estimate is made of the difference in the course of thirteen years between the lunar and solar years. The epic here uses the technical term, *abhyadhika*, and says that in this period five months and twelve days would be in excess,

*eṣām abhyadhikā māsāḥ pañca ca dvādaśa kṣapāḥ  
trayodaśānām varṣāṇām.*

The difference is caused by "excess of time," *kālātirekeṇa*, and "the transit of luminaries," *jyotiṣām ca vyatikramāt*.<sup>1</sup> In this passage the "wheel of time" suffers "partition" into the elements already mentioned, *kalā*, *kāṣṭhā*, *muhūrta*, *dina*, including asterisms and *grahas* as time-recorders, after fortnight, month, season, and year.

Two other passages may possibly refer to the five-year cycle by implication and suggestion. One of these is that containing the pseudo-epic name of Viṣṇu, Vatsara, xiii. 149. 63, as this is the name of the year of a cycle; and the other is the passage, i. 124. 22, likening the (group of) five Pandus to years: *anusaṁvatsaram jātāḥ . . Pāṇḍuputrā vyārājanta pañca saṁvatsarā iva*, "like (the group of) five years." The sixth-year intercalated month of thirty-six days (ŚB. ix. 1. 1. 43; x. 5. 4. 12) is not recognized in the epic.

After the time-table given above, p. 13, which is virtually that of the later first book of Manu and of the Purāṇas, the epic poet, like the law-giver, continues with an account of greater periods of time. The sun, as is often said, is the chief divider of time. God is "the fruit in the acts accomplished in the moments and other (time-divisions) of the sharp-rayed sun," xiii. 14. 419. The sun divides the day and night into work-time and sleep-time. In the day and night of the Manes, the bright fortnight

<sup>1</sup> In five years there are sixty days over; in thirteen, one hundred and fifty-six days, five (lunar) months and twelve days ( $156 - 12 = 144 \div 5 = 28\frac{4}{5}$ ).

is their day and the dark is their night ! Manu inverts the order, 1. 66 ; but here, *kṛṣṇaḥ svapnāya śarvarī*, etc., there is a confusion of men and Manes. A year of man is a day and night of the gods. The northern course of the sun in their day ; the southern, their night. Their are four ages, *Kṛta*, of four thousand years, etc., as in Manu, with the “twilight periods of just as many hundreds ;” each later age losing a quarter, *ekapādena hīyante*, in thousands and hundreds. In vi. 10. 3, the name of the fourth age, *Kali*, is *Tiṣya*. The length of the ages is stated again, as just given, in iii. 188. 22 f., but without aeonic speculations added. The moral qualities of each age are often described ; at length, for example, in iii. 149. According to the usual later view, the *Kali* age begins with the death of *Kṛṣṇa* ; but according to v. 142. 8 f., at the very beginning of the great war, though probably the moral and not the chronological side is emphasized in *Kṛṣṇa*’s repeated words, *na tadā bhavitā tretā na kṛtā dvāparam na ca*. That “the *Rāj* makes the age” is an epic truism that discounts all chronology. As to how the ages got their twilights, see Mr. Aiyer’s *Chronology of Ancient India*, p. 129, where it is shown that one-tenth of the age makes the twilight, as the twilight of a day is one-tenth of a day of twelve hours, measuring 3 *ghaṭikās*, 1 h. 12 m.

The sum of the thousands and hundreds (to continue the timetable already cited) is twelve thousand (years). Both seers and mathematicians, *saṁkhyāvidāḥ*, recognize this age, *yuga*, of twelve thousand (years) ; and one thousand such ages (12,000,000 human years) are equal to a day of Brahman, whose night is of the same length, *śahasrayugaparyantam*, xii. 232. 15 f. Nothing is said here of divine *Yugas*. In xii. 343. 3, the period of creation lasts till the end of a thousand *caturyugas*. The day of Brahman is again recognized as a thousand *Yugas* in iii. 3. 55 and vi. 32, 17, with no intimation that the *Yuga* is other than that of the twelve thousand human-year *Yuga*. The *divyaṁ varṣasahasram* is a commonplace in tales, as in the account at iii. 173. 7 of *Dāitya* austerities. According to xii. 227. 70, the (Vedic) gods live only a thousand (divine) years, *varṣasahasrāntam*.

The aeons, *Kalpas*, mark a greater period. At the end of a *Kalpa* the creative eighth of God changes, *parivartate*, xii. 281.

63. The Kalpa is thus one day of the creator-god (1000×12000 years) and forms a new unit. It is in such units that the day of Brahman is reckoned in the later epic, xii. 312. 1f. The day of the Unmanifest is “twice five thousand Kalpas,” *pañca kalpasahasrāṇi dviguṇāny ahar ucyate*, and his night is the same. He creates, when he wakes, the demiurge creator, Brahman, and the latter’s day is the same length less a *pāda*, *daśa kalpasahasrāṇi pādonāny ahar ucyate*. Thus Brahman’s day is now reckoned as one quarter less than that of the Unmanifest, or as seven thousand five hundred Kalpas, “and his night is of the same extent.”<sup>1</sup>

According to Manu, 1. 71 f., the total of four ages, consisting in all of twelve thousand (human) years, is one age of the gods, and a day of Brahman is a thousand such divine ages, the expressions being *caturyugam* (*dvādaśasāhasram*) as *devānām yugam*, and *dāivikānām yugānām sahasram* as *brāhman ekam ahaḥ*. Now in xii. 208. 9, Soma is represented as a *paryupāsītā*, ascetic reverer (?), during a thousand divine ages, *sahasram divyānām yugānām*, which should be a day of Brahman; and in xii. 328. 24, Mahādeva stands, as an ascetic, on one foot during a *divyam varṣasahasram*, or thousand years divine (of the gods). But in xii. 303. 14, as in the Kalpa enumeration above, the day of Brahman is reckoned not in ages, Yugas, but in aeons, Kalpas, albeit not of the same sort:

*yugam dvādaśasāhasram kalpam vidhi caturyugam  
daśakalpaśatāvṛttam ahaḥ tad brāhman ucyate,*

“know that twelve thousand (years) are an age; a total of four ages, an aeon; the day of Brahman is said to be ten hundred times an aeon.” Nilakaṇṭha interprets the years and ages as divine, and the Kalpa as a thousand *caturyugas*, the Kalpa thus being a day of Brahman. This certainly cannot be extracted from the text, though it is the orthodox view. Nilakaṇṭha at this place reckons out the year of Brahman in divine days and years, which gives the usual Puranic creative period. But a thousand *caturyugas* being the usual epic view of a day of Brahman, the text above is uncombinable with other epic data,

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<sup>1</sup> The third creation (Ego-creation) and sense-creation have, respectively, days of five and three thousand Kalpas. ib. 11 and 15.

and must be twisted out of its real meaning to be in accord with them.

Two passages give the duration of a single spirit's reincarnations, in which the *jīva* is supposed to wander. In xii. 304. 44; 305. 1 (continuation of the passage above) the spirit passes through *sargakoṭisahasrāṇi* or thousands of crores of creations; and in xii. 281. 36 and 43, every *jīva*, in a Buddhistic passage, passes through fourteen hundred thousand courses on its way to perfection; eight hundred periods of *saṁhāra-vikṣepa* in man's estate alone.

Only the later epic knows the Mahā-kalpas by name. Thoroughly Puranic are the passages; xii. 337. 1, *tato 'tīte mahākalpe*; 340, 115, *mahākalpasahasrāṇi mahākalpaśatāni ca samatītāni rājendra sārgāś ca pralayās ca ha*. So in xiii. 107. 77, *phalam padmaśataprakhyam mahākalpaṁ daśādhikam*; but never any such allusion in the real epic.

After the specimen of time-measures given in my *Great Epic*, p. 206, I need offer no further examples of the epic's tendency to count time by "oceans," *sāgara*, and other similar terms, *padma*, *patākā*, *śaṅku*, *nidhi*, etc. They will be found, years rolled up to countless billions, in xiii. 107. 21 f., to select only one short passage from the numerous instances afforded by these arithmetical jugglers. As the poets come to consider the extent of time in aeons, creations, *visarga* and *saṁhāra*, the imagination is stretched to its utmost to devise parallels illustrative of the periods. A particle of sand removed daily from the Himālaya till all the mountain is reduced to the plain; a drop of water daily drawn from thousands of league-long mile-deep lakes till all are drained; such are the images that describe these (pseudo-epic) creations. One will suffice : xii. 281. 30 f. :

*saṁhāravikṣepasahasrakotīs*  
*tiṣṭhanti jīvāḥ pracaranti cā 'nye*<sup>1</sup>  
*prajāvisargasya ca pārimāṇyaṁ*  
*vāpīśahasrāṇi bahūni, dāitya,*  
*vāpyaḥ punar yojanavistrītās tāḥ*  
*krośaṁ ca gambhīratayā 'vagādhāḥ*

---

<sup>1</sup> The inanimate and animate world.



*āyāmataḥ pañcaśatāś ca sarvāḥ  
 pratyekaśo yojanataḥ pravṛddhāḥ  
 vāpyā jalaṁ kṣipyati vālakotīyā<sup>1</sup> tv  
 ahnā sakre cā 'py atha na dvitīyam  
 tāsāṁ kṣaye viddhi param viṣargaṁ  
 saṁhāram ekaṁ ca tathā prajānām.*

The passage cited above, p. 32, from iii. 190. 90, which speaks of sun, moon, Jupiter and Tiṣya as being together, implies the recognition of the sixty-year Brhaspati cycle, as the sun, moon, and Brhaspati are in Puṣya once only in this cycle.<sup>2</sup>

The doctrine of Manvantaras is implied (according to the commentator) in Bali's prophecy at xii. 225. 31. When the sun shining in the meridian, *madhyāndine*, ceases to shine from all directions, then there will be war again between the gods and demons. Indra repudiates the idea, however, saying that the sun will never depart from his ordained course. But the Manvantara-theory may well be implied here, for, though foreign to the early epic, the Manvantaras, not only in their earlier form but even in their later fourteen-Manu form, are known to the pseudo-epic. In the early epic, only the Mihira hymn, a late intrusion, recognizes these periods of time. Here, iii. 3. 55-56, a day of Brahman is defined (as above) and the Manus and Manvantaras are referred to. The periods are referred to next in xii. 59. 115 and the first group of Manus is implied at xii. 285. 1, *Vāivasvate 'ntare*, which phase appears again in 337. 56, "when the Tretā Yuga shall have replaced Kṛta in the (Manv)antare of Vivasvat." From here on, the later epic is full of allusions to the Manvantaras: *pūrve ca manvantare Svāyambhuve*, 343. 26; *Manoḥ svāyambhuve 'ntare*, 350. 42; *manvantareṣu*, ib. 43; *Manu Svārociṣa*, 349. 36 f.; *Śanāiścaraḥ* (Saturn) *sūryaputro bhaviṣyati Manur mahān, tasmin manvantare cāi 'va Manvādigaṇapūrvakāḥ (tvam eva bhavitā, vatsa)*, 350. 55. In xiii. 14. 38-39, for the first time in the epic, the Manvantaras appear (as protectors, in connection with the wives, maids, and mother of the gods) along with seasons,

<sup>1</sup> The water of the lake as flung out drop by drop with "the end of a hair" seems to be a play on the chronological meaning of *koṭi*, the "end" of arithmetic thought.

<sup>2</sup> Compare Aiyer, *Chronology*, p. 133.

years, *kṣanas*, *lavas*, *muhūrtas*, *nimeṣas* and Yuga-changes. Finally, a Manu of the second group (of seven) appears in xiii. 18. 43, *Sāvarnasya Manoh sarge saptarṣiś ca bhaviṣyati*.

The real epic knows nothing of Great Kalpas and secondary Manvantaras. They belong to the Puranic period including the later epic, but even the first (Puranic) chapter of Manu falls short of the extravagance reflected in Śānti and Anuśāsana. In regard to the cogency of this relation used as an argument historically, it does not appear to me that the remark of M. Barth, *Bulletin*, 1902, p. 30, poses the question properly. Here, in a résumé of a similar argument, M. Barth says: "ces mentions sont rares dans les portions narratives, fréquentes dans les parties didactiques, ce que, à première vue, paraît assez naturel." The light sarcasm would be justified if the preceding words gave the whole situation, but they do not. The narrative portions of the poem are not quite sundered from didactic material, and the point is that such didactic material, though treating of the same matter, treats it in less modern fashion; whereas the treatment of Śānti and Anuśāsana is, in contrast, rather that of the later Purāṇas. Fear of being thought "expert in cutting up the poem" need deter no one from the admission that epic chronology represents an earlier point of view in the early books, and the Puranic point of view in what I call the pseudo-epic. Nay, rather, one might ask, is he an expert historian who thinks that such a difference of view is quite without historical significance?

#### EXCURSUS. ANALYSIS OF EPIC DATES.

The Pandus were born a year apart, i. 124. 22, and when they first went to Pañcāla they were all proficient in the use of arms. The youngest must therefore have been at least 16 years old, and Arjuna 17 at this time, when they ravaged Drupada's kingdom, i. 61. 31-35; 135-138 (Karna made king of Aṅga, 136). A year after this, Yudhiṣṭhira was installed, 139. 1, and Drupada sought a son to avenge his overthrow, 167. 14 (Arjuna now 18). Some time was spent in conquering the world, 139, but, regarding this as a matter of a few weeks (!), the next stage is marked by the expedition to Vāraṇāvata, where the Pandus spent a year (148. 1, Arjuna was now 19), before they traversed the woods and, after spending quite a long time, *cira-*

*rātroṣitāḥ*, 168. 3, at Ekacakrā, went to Pañcāla again, 168. 11. Here they remained one year, *parisamvatsaroṣitāḥ*, i. 61. 31, after getting Drāupadī (she was born grown up, like her twin brother), and Arjuna must then have been 20. After this they visited Hastinā, went to Khāṇḍava, and remained there “many years,” *samvatsaragaṇān bahūn*, before Arjuna was exiled, i. 61. 35.

Arjuna on being exiled “lived a whole year and one month in the wood” and then sought out Kṛṣṇā at Dvāravatī and took Subhadrā, i. 61. 42,

*sa vāi samvatsaram pūrṇam māsaṁ cāi 'kaṁ vane vasan  
tato 'gacchad Dhṛṣṭikeśam, etc.*

Then, after the burning of Khāṇḍava and the gambling at Hastinā, the Pandus were exiled for 13 years; and the war began on the 14th year, i. 61. 50, etc.

If the “many years” at Khāṇḍava be reckoned only as three, Arjuna would be 23 when exiled for circa two years, aet. 25, returning 4 years before the banishment of all the Pandus, at the beginning of which he would be 29, and at the end of the 13 years, when his son was 16, Arjuna himself would be 42. Part of the years reckoned by Abhimanyu's age is included in the 1 year 2 months of the building of the Sabhā, ii. 3. 37, *māsāḥ paricaturdaśaiḥ*.

But discrepancies occur. There is no record of a year spent with Drupada in the full account of the wedding. On the contrary, i. 199–207 imply that the Pandus return to Hastinā soon after the wedding. Nor is it consistent that the Pandus, who have already ravaged Drupada's kingdom, should regard it as *apūrvadrṣṭa* on their second journey thither, i. 138 and 168. 6. In i. 141, moreover, Yudhiṣṭhira is clearly not yet installed as heir-apparent, although he had already been installed in i. 139. 1, a year after Drupada's defeat. Even the year spent in Vārāṇavatā (i. 149. 1) seems in i. 146 and 147 to be regarded as a term of a month or a few days. There is no inconsistency in the timeless birth and growth of Bhīma's son, for it is expressly declared to be such; though the period of wandering, i. 156, should occupy some reasonable time omitted in the account above. But the difference between the clear statement of the first book, that Arjuna lived a year and a month in the

wood and then raped Subhadrā, and the subsequent prolongation of Arjuna's exile to twelve years i. 212-221, three years of which are spent at Mañipur, i. 215. 26, and one each in Dvāraka and Puṣkara, 231, is important for the critique of the epic. Drāupadī's five children were born "at intervals of a year," *ekavarṣāntarāḥ*, i. 221. 66, 78, 86, but though Arjuna's son was necessarily born nearly a year after his return, and was a young warrior in the great war, his age at death is not specified. There is a difficulty, however, even here, for Drāupadī's sons born one and two years later are also young fighters and the youngest would be but 14, whereas Abhimanyu at 16 is always celebrated as the youthful warrior par excellence, and 16 is the youngest age at which boys were considered equal to war.

Another discrepancy which gives a comical effect is found in iii. 33. 12, where Abhimanyu, who should now be about four, is solemnly said to be one of those who did not approve of Yudhiṣṭhira's life! At this time the Pandus had lived 13 months in the wood. In iii. 36-37 they still live "some time" before Arjuna starts on his trip. Five years Arjuna passed in heaven, iii. 44. 5; 141. 7; 164. 17, while the Pandus waited five years for him, iii. 50. 12. In iii. 158. 3, the time of wandering is now four years, Arjuna is to be expected about the fifth, *pañcanām abhītaḥ samām*, and in iii. 165-174. 9 the five years end with Arjuna's return. In iii. 176. 5-8 they "lived six years before and four years with Arjuna," ten *sāmaḥ* altogether, and it is now the eleventh year in the wood, *ekādaśam varṣam idaṁ vasāmaḥ*. After this they lived in Viśākhayūpa forest one year, 177. 17 (with some preliminary marching), and in 177. 20, the somewhat belated twelfth year arrives, *dvādaśam varṣam upopayātam*. The twelve years in the forest are referred to again in 183. 39; 239. 18 as not yet over. In iii. 243. 15, Yudhiṣṭhira cannot rescue Duryodhana personally because of his vow, *kratu*, but he urges his brother to do this! In this (twelfth) year, Karna (already the king of Aṅga) conquers the Aṅgas (and Drupada), and all the north, east, west, and south country (254. 19), including the Yavanas and other foreigners all "in a short time," *kālena nā 'tidīrghena*, 254. 33.

A year and eight months now elapse (after the twelfth year has begun) and the Pandus are still in the wood, eating deer (after the Ghōṣayātrā), *sāṣṭamāsam hi no varṣam yad enān*

*upayukṣmahe* (eating the deer here), iii. 258. 12 (after the liberation of Duryodhana in 246; here Yudhiṣṭhira has a conversation with Duryodhana after rescuing him).

By this time about fourteen years must have passed since the Pandus were banished, but in iii. 259 the narrative reverts with the opening statement that while they dwelt miserably in the woods "eleven years passed away," as if the twelfth had not yet come. The thirteenth year, however, finally comes, iii. 315. 5, *śeṣaṁ varṣaṁ trayodaśam*, the completion of the twelfth being announced in 310. 41, "what did they do when the twelfth year was over?"

In the fourth book occurs the most glaring inconsistency in the poem. The bow of Arjuna is here said to have been already carried for 65 years by that hero (who is now 40 or 50 years old, according to the contradictory data already furnished), iv. 43. 6. The 13 years of waiting are paralleled by the 13 days which Drāupadī begs to be allowed still to remain in the town, 24. 29, the agreement and the 13th year expiring, iv. 31. 2 and 4, on the Trigarta expedition, though in 47. 4 the 13th year is not yet over, *vartate tu trayodaśam*, in Duryodhana's opinion. But it becomes now a question of years reckoned as lunar or solar, five months and twelve days being the difference (see above, p. 42). In 26. 3, Duryodhana says that most of the time is past and very little remains, *alpāvaśiṣṭaṁ kālasya gata-bhūyisthaṁ antataḥ*; in 21. 17, only a month and a half remain. In 48. 5, Arjuna is represented as having been *samāhitaḥ* (and therefore out of practice in fighting) for 13 years, *varṣāṇy aṣṭāu ca pañca ca*; in iv. 49. 6-8, he is said to have learned arms from Śakra for 5 years, as he practiced *brahmacarya* for 5 years and then stole Drāupadī. In iv. 49. 18 Arjuna is said by Kṛpā to be freed, having been deceived, *nikṛtaḥ*, by the Kurus for 13 years, as in 62. 14. The exile in the wood for 12 years is alluded to in 60. 7. Finally, in iv. 72. 14, on the end of the 13th year, *trayodaśe varṣe nivṛtte*, being at Upaplavya, Abhimanyu is married (cf. 23).

In v. 1. 11-13, *varṣāṇi ṣaṭ sapta ca trayodaśaś cāi 'va sudustaro 'yam*, the 13th year is now ended. In v. 20. 9, the expression *vāsitāś ca mahārāṇye varṣāṇi 'ha trayodaśa* seems to imply that the 13 years are passed in a forest; but the sequence recognizes the Virāṭa episode. In v. 21. 13, Karna says the 13 years are not yet past, and puts it as if they still had to stay in

the wood, *yathāpratijñam kālaṁ taṁ carantu vanam āśritāḥ*. Although Virāṭa is recognized in v. 22, yet no notice is taken of the sojourn there in v. 26, where indeed it is said (25) that the Kurus live only because they have not yet heard Arjuna's bow, a curious statement in view of iv. 55, etc. The thirteen years (one incognito) are recognized, however, in v. 48. 92, and elsewhere (below).

In v. 52. 10-11 occurs the following śloka, spoken just before the war, at the end of the thirteenth year (the subject is Arjuna):

*trayastrīṁśat samāhūya khāṇḍave 'gnīm atarpayat  
jagāya ca surān sarvān nā 'sya vidmaḥ parājayam.*

C has *sūta*, vocative, for *hūya*, and N. interprets "thirty-three years, *samāḥ*, are past." But this is impossible. B's reading is evidently correct (N.'s comment fits only C!) and the 33 are not years but the gods challenged by Arjuna, *samāhūya* being a common epic word in these circumstances.

Another year appears to be added in v. 79. 19, where the cattle-lifting foray of Virāṭa is alluded to as occurring *saṁvat-saragate 'dhvani*, "on the expedition of a year past" (N. *gata-saṁvatsare*; cf. xi. 3. 16, *saṁvatsaragata*, "a year old"). But in v. 82. 40 it is still only 13 years that Drāupadī has waited for revenge, and Prthā says in v. 90. 47, *caturdaśam idaṁ varṣaṁ yaṁ nā 'paśyam* (*Drāupadīm*), so ib. śl. 60 and 70; and in 129. 47, the queen says, *alam aṅga nikāro 'yaṁ trayodaśasamāḥ kṛtaḥ*. The "fourteenth year" merely implies that the thirteenth is ended.

An apparent discrepancy occurs at v. 141. 13. Karna was made king of Aṅga at the tournament, which according to the narrative already given occurred several years before the gambling. Yet in this passage Karna declares that through his fidelity to the Kāurava prince he has enjoyed a kingdom "without thorns" for thirteen years, *mayā trayodaśa samā bhuktaṁ rājyam akantakam*. This may be made to mean that his kingdom has been thornless only since the retirement of the Pandus; but the natural interpretation is that the kingdom has been his only for the time mentioned, for Karna himself is reviewing his life and this is the only allusion in his speech to the kingdom given to him by Duryodhana. The explanation, however, lies rather in the assumption of a poetic lapsus, for the words are

almost identical with those employed by Duryodhana himself in v. 160. 110, where he says to Arjuna, *trayodaśa samā bhuktam rājyam vilapatas tava*, and the thirteen years of kingly enjoyment on the part of Duryodhana are contrasted with the weeping of his foes (161. 8 and 28 repeat this in the herald's words).

The exact time of the battle is given as to occur on the seventh day from the interview in v. 142. 17, at the time of the new moon. In Mr. Aiyer's little book, *The Chronology of Ancient India*, the statement in v. 83. 7, that Kṛṣṇa set out on his mission "in Kārtika, under the star Revatī, at the end of autumn," is united with this, which in turn is interpreted to mean that the new moon will happen in Jyesthā Nakṣatra (in seven days, emended by Mr. Aiyer to "ten"). It was, however, under Puṣya Nakṣatra that the Kuru army took the field, v. 150. 3, *puṣyo 'dya*, as did the Pandus, ix. 35. 10 and 15, and the armies were prepared, according to vi. 17. 2, *maghā-viṣayagah somah* under Maghā. The asterism should be Citrā (v. 143. 10; vi. 3. 12, 28, etc.). Eighteen days of battle are recognized, save in the interpolation of Balarāma, whose journey can be interpreted only to mean that the battle lasted forty-two days (below).

During the battle, the only point to be noticed is the age of the combatants, the leaders Duryodhana and Yudhiṣṭhira being now over forty or fifty (as above). Arjuna, two years younger, is *taruṇa* and *yuvan*, Nakula is *sukumāro yuvā śūrah*, but Droṇa is eighty-five; vii. 12. 22; 83. 23; 110. 81; 125. 73; 126. 39. Despite these epithets applied to the Pandus, which imply middle-age strength or even youthful delicacy, in vii. 196. 44, Arjuna says that the short remnant of their days will be affected by Droṇa's unrighteous death, *yadā gataṁ vayo bhūyagḥ śiṣṭam alpataraṁ ca naḥ*, "gone is the greater part of life, it is the lesser part remains to us," though *vayagḥ* (cf. *pravaṣagḥ*) may imply strength of life more than life (yet the conclusion does not favor this, *tasye 'dānīm vikāro 'yam adharmo 'yam kṛto mahān*). Karṇa also is *yuvan*, viii. 8. 11. This is not middle-age, however, according to the antithesis of *yāuvana*, *madhya*, *vṛddha*, or *yāuvana*, *madhya*, *jarā* (see the citations, in the last article of the series in this Journal), nor can it be interpreted as fool's age as in x. 3. 11, for it is intended, as in the citations above, for a compliment. The time-term for fool is *bāla*, as in xi. 17. 20, applied to Duryodhana.

After the battle comes the inconsistency of Balarāma's expedition. He started out just before the battle and returned at its close, making forty-two days in all, from 'Pusya to Śravaṇa, *catvāriṅśad ahāny adya dve ca*, etc., ix. 34. 6; 54. 12.

It is quite impossible to reconcile this with the statements in regard to the length of the battle (eighteen days) found elsewhere in the epic. In ix. 35. 14, Balarāma starts under Māitra Nakṣatra, i. e. Anurādhā. Mr. Aiyer, *op. cit.* p. 101, emends by changing 42 to 24, *catvāriṅśat* to *caturviṅśaty*, and *Śravaṇe* to *Rohiṇyām*; but this is merely a confession of inability to reconcile the conflicting statements except by changing the text completely. At the same place, Mr. Aiyer endeavors to reconcile the appearance of the moon in the night battle in vii. 185 f. on the fourteenth day, with the previous account of the new moon. Mr. Aiyer's conclusion that the war ended on the 51st day before the winter solstice, and began on Oct. 14th, 1194 B.C. (or that at least the war took place in the latter half of this year), does not depend altogether on the rectification of these obvious errors, but is based to some extent on the interpretation of the doubtful verse xiii. 168. 28 (27, "for 58 nights Bhīma lies on his couch"), as already explained.

In xi. 17. 21, "he who has enjoyed undisputed royalty for 13 years now lies dead," the fourteenth year implied in the early account is pointedly ignored, as it is elsewhere, notably in viii. 68. 9, "there are now these 13 years in which we have lived in the hope of Arjuna," and the battle takes place immediately on the end of the 13th year.

But as to the assumption that the Pandus were originally banished for only twelve years and that the thirteenth year is a later addition, it must be proved by the content, style, and metrical form of Virāṭa rather than by the discrepancies in the texts that refer to the years of banishment. I used to think that the thirteenth year was interpolated on the further ground that such discrepancies revealed a prior stage in which the thirteenth year was actually unrecognized, as in iii. 24. 2; v. 72. 9; but a careful survey of all the cases now leads me to the conclusion that this may be due merely to the poetic point of view. An example as good as any other is found in vii. 137. 47, in which a reference is made to the fire of rage lasting 13 years, and 197. 7, "the impatience of 13 years," as compared with ib. 145. 93, where "the sorrow of 12 years" is mentioned.



In one case the anger during the whole period, in the other the wretchedness during the life in the wood, is emphasized. So in viii. 9. 58, it is said that Yudhiṣṭhira did not sleep for thirteen years because of his fear of Kārṇa, a statement repeated in different words in 66. 15 and again in xi. 21. 7, and this is presented, in viii. 74. 47, as the grief acquired in thirteen years, *duḥkham trayodaśasamārjitaṃ*, whereas in viii. 11. 27 mention is made of the grief (arrow) of twelve years, *śalyo mama dvādaśavārśikaḥ*. Other references in this book are found in viii. 91. 4, in which an extra year is recognized besides twelve in the wood, and 96. 45, "we shall sleep well to-day after being awake in sorrow for 13 years." The next book too recognizes only 13 years. In ix. 33. 4, which is repeated in 58. 19 with var. lec., this section repeating the substance of 33 after the Tirtha episode, a long interpolation (ch. 33-51), it is said that Duryodhana has been practicing on an iron statue of Bhīma for 13 years (this iron statue reappears in xi. 12. 15 f.). Also in xv. 4. 15 the thirteenth year is recognized. In the earlier books, the thirteenth year is recognized, besides passages already cited, in ii. 46. 11; 74. 18 f. -76; 77. 30; 80. 34; iii. 3. 74; 8. 3; 46. 58; 49. 11; 51. 33 f.; 176. 10 f.; 252. 43; 256. 14; 261. 50; v. 61. 19; 95. 41; 160. 89; all referring either to the thirteenth year as being completed, or, what amounts to the same thing, to what will happen in the fourteenth year, after the thirteenth, e. g. ii. 77. 30 and iii. 261. 50. I think now, therefore, that the thirteenth year must be regarded as belonging to the original conception of the present poem and that the late characteristics of Virāṭa are due to subsequent working-over of the delectable scenes embodied in it. Possibly the original form was simply an extra year "in concealment" (incognito). The time-discrepancy is of no more weight than in the application of thirteen years to the wood-life exclusively. This curious statement, that the Pāṇḍavas lived not only in banishment but in the wood for 13 years, is found three times, once as cited above, p. 50 ad fin., again in vii. 197. 10,

*vanam pravrajitās ca sma valkalājīnavāsasaḥ  
anarhamānās taṃ bhāvam trayodaśasamāḥ parāñiḥ,*

"we were exiled by our enemies to the woods, clothed in bark and skins, undeserving of that condition, for thirteen years;" and in xv. 11. 23,

*yatra trayodaśasamā vane vanyena jīvatha,*

(that condition) "when for thirteen years you lived in the wood on forest products." But as the latter is easily explained as a phrase (also in the Rāmāyaṇa, see my list of parallels, *Great Epic*, p. 433, No. 242), and is preceded by an explicit reference to the "secret residence" in contrast to the "twelve years hate," ib. 20, so in the former case, "that condition" carries the thought over to the end of the period during which the Pandus were treated badly for thirteen years. So also the fourteenth year in the wood, logically to be extracted from the narrative as sketched above, is probably merely a poetic lapsus. Abhimanyu is killed at 16 years of age, after having been married for six months, i. 67. 117, etc.; xi. 20. 29.

In the tenth and eleventh books the data carry us forward to the end of the Pandus. Kṛṣṇa is slain on the 36th year after the war; xi. 25. 44, repeated in xvi. 1. 1. During this time the Pandus defer to Dhṛtarāṣṭra for 15 years, and the latter, xv. 20. 32, lives three years more. It is 16 years after the war in xv. 29. 37, at which time Drāupadī is "just about touching middle age" (!), xv. 25. 9. Two years more pass, xv. 37. 1, after more than a month's visit on Dhṛtarāṣṭra, *māsaḥ samadhikāḥ*, xv. 36. 11. Three of the eighteen years after the war were passed by the old king: in the wood and fifteen in town, xv. 39. 25. These form explicit denials of the fact (inferred from the circumstance that Parikṣit was a baby at the time of the visit) that Parikṣit was crowned about sixteen years after the war, as shown by Mr. Aiyer. The epic in this regard contradicts itself and can scarcely be taken as a safe guide for its own date as far as these data are concerned, x. 16. 7; xv. 15. 10; 25. 10. Parikṣit reigns 60 years, according to x. 16. 15, though in a final extravagance the epic declares that Yudhiṣṭhira's reign alone embraces "thousands of years," xv. 10. 22,

*tathā varṣasahasrāṇi kuntīputreṇa dhīmatā  
pālyamānā dhṛtīmatā sukhān vīndāmahe nṛpa.*

Altogether the epic is as fairly consistent in its dates as was to be expected of so huge a compilation. Some of the inconsistencies, however, are so decided as to admit of no reasonable doubt that the poem has been largely interpolated.

## SYNTACTICAL NOTE ON THE ABLATIVE OF TIME.

It is not worth while to make a separate article out of this note, so I append it here, though scarcely in place. In the *Am. Journal of Philology*, xxiv, p. 1 f., I have tried to show that, in epic and earlier Sanskrit, the ablative of time-words does not mean "after" but "up to" or "within" the time named, my general conclusion in respect of all the grammatical cases being that in early Sanskrit no grammatical case expresses temporal posteriority any more than it does temporal priority, though "time after" may be implied by any case (except the vocative), even by the nominative and accusative. The ablative in particular approximates to a true indication of posteriority, yet only in serial time, measured *from* a starting-point. This note illustrates the use of the ablative in the later literature of the *Bṛhat Saṃhitā*. Here is strikingly shown how such an expression as *ṣaṇmāsāt* regularly includes the period and does not mean "after a semester," but within it. Good examples are found in xxx, xxxii, and xlii. In xxx. 12 and 31, *saptāhāt* is "within a week;" in xxxii, "in four fortnights," and "in a week" are expressed by the instrumental and by *saptāhāt* respectively; in xlii. 7, it is said that a rise in price will take place *ṣaṣṭhe māsi*, *varṣārdhāt*, and (*sthitvā*) *māsam*, all alike giving the limit. So in xlvi. 14, 30, 39, 53, 'time within which' is expressed by instrumental and ablative, *ṣaṇmāsāt*, and so elsewhere. But in this later literature, BS. lxxviii. 20, appears (as noticed in my article) an innovation in *tryahāt saṃnivartate*, in the apparent meaning "ceases after three days." BS. has *ā mūrdhataḥ* in the sense "from the head onward," lii. 10, as well as *ā varṣāt*, "within a year," xlv. 16 (also the *antam* construction, *ābrahmakūṭāntam*, lxxiv. 20). The nominative of duration, as illustrated in the article referred to above, has here a still more striking illustration: (*yo* 'dyāt), *sāi* 'kāni viṃśatir (the reading of all MSS.; see Kern's note) *ahāni*, lxxvi. 3: (whoso eats), "days a twenty (nom.!) and one."